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BOAT SAILING AND RACING;

CONTAINING

PRACTICAL INSTRUCTIONS FOR BENDING AND SETTING SAILS, TRIMMING, STEERING, AND HANDLING BOATS UNDER ALL CIRCUMSTANCES OF WIND AND WEATHER.

DESCRIPTIONS OF SOME INTERESTING AND INSTRUCTIVE FOREIGN RIGS.

ALSO

SOME USEFUL HINTS ON RACING, WITH A VIEW TO WINNING.

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BY

CAPTAIN C. C. P. FITZGERALD, R.N.

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GOD
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Dedication.

TO

ADMIRAL SIR G. T. P. HORNBY, K.C.B.

WHOSE

WELL KNOWN SKILL AS A SEAMAN

AND

THE ENCOURAGEMENT HE HAS EVER GIVEN,

TO

BOAT SAILING

REQUIRE NO COMMENT,

This little Book is Dedicated,

WITH THE GREATEST RESPECT

BY HIS OBEDIENT SERVANT

THE AUTHOR.

PREFACE TO THE SECOND EDITION.

As a second edition of this little book has been called for, I have somewhat enlarged it and added some fresh matter, which I hope will prove to be both interesting and useful; and I trust that I have succeeded in making it (as the penny-a-liners say) "more worthy of that distinguished patronage with which it has been received."

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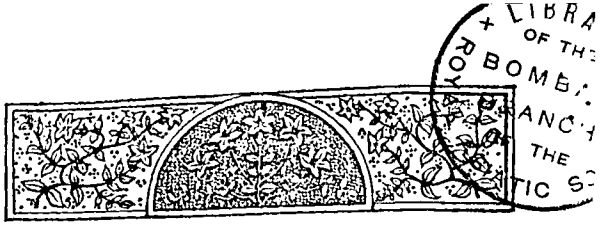


BOAT SAILING AND RACING.

CHAPTER I.

GENERAL.

BOAT SAILING may be looked upon as the nursery for ship sailing, the same general principles apply, in both cases, and although it is quite possible that an accomplished boat sailor may know nothing of ship sailing through not having had any opportunity of practicing it, still it is certain that a good knowledge of boat sailing will be an excellent foundation for seamanship in all its branches; and any man or boy who has a taste for salt water, (and certainly those who intend to follow the sea as a profession ought to have such a taste), can pick up the first elements of seamanship; and practice and study its broad and fundamental principles by sailing a boat under all circumstances of wind and weather, in fact he will not require to study much, for it will come to him quite naturally

and without an effort, especially if he likes it and takes an interest in it, for it is astonishing how much more quickly we learn what we like, than what we don't like. If schoolboys only liked Greek and Latin as much as they like play what an easy time the masters would have: so that I don't think any boy should be sent to sea unless he has a decided taste for it People in general either have a great taste for the sea and everything connected with it, or else they go to the other extreme, and have a great repugnance to it, which repugnance familiarity does not overcome, but rather tends to strengthen; and if these people go to sea they may expect to have a bad time of it, and are not likely to become good seamen. I do not write for these, but for those who having a taste for the sea, and for matters nautical, and who not being made of barley sugar, are not in mortal terror of melting whenever they are washed down with a drop or two of salt water, but who can treat a wet jacket as a joke, and who really wish to become boat sailors, and be able to handle a boat under all ordinary circumstances in a skilful and seamanlike manner; and if the few hints which I propose to throw out in this little book in any way assist them, I shall feel myself amply rewarded.

Seamanship may be described as an inexact science, it certainly cannot be reduced to a formula, nor learnt out of a book, therefore let no one

think that he is going to *learn* boat sailing by reading this book, all I can do for him is to give him a few hints which may prove useful in combination with practice, and to try and impress upon him that the only way to learn it, is to practice it with his eyes open, and to lose no opportunity of sailing in any style of boat that he can get hold of, from a punt to a ship's launch, and of always steering himself, whenever he can. Sailing in a boat which is cleverly steered, and skilfully handled will teach a good deal; but practice, and plenty of it, is the only thing that will make a good boat sailor.

It is the custom amongst yachtsmen and watermen to deride man-of-war boat sailing, and to laugh at our boats when they see them in difficulties, managed, or possibly mismanaged, by an inexperienced midshipman, a green coxwain, and an untrained boat's crew, trying to work their boat against wind and tide with a dipping lug, and finally having to resort to their oars, or perhaps getting a tow from a friendly steam launch, if they have been lucky enough in the mean time to escape laying their boat thwarthawse of some vessel at anchor, or getting her stove against some twirling buoy. Such exhibitions are no doubt legitimate sources of merriment for outsiders, particularly for yachtsmen, who are always great critics upon all subjects connected with men-of-war: but they can only cause pain and mortification to all

officers unto whom the honour and credit of their profession is dear.

It is on the face of it obviously unfair to compare a man-of-war's boat to any yacht, however small she may be, or even to a well found wherry, as the latter are built for sailing, and not to fulfill a variety of purposes; but whereas any lubber can beat to windward in a ten ton racing cutter, it takes some skill to do so in a flat-bottomed ship's launch, without a false keel or any ballast except a few barricoes; nevertheless it can be done by paying close attention to the setting of the sails, staying of the masts, trim of the boat, and watchful and attentive steering, and when really well done is a very creditable performance.

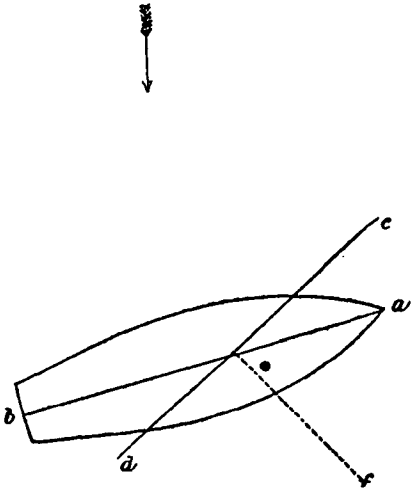
It should always be remembered that man-of-war boats are not built exclusively for sailing: far from it; they are intended to fulfil a variety of purposes. They must be able to row fairly well, they must be good sea boats, they must be able to go into shallow water, to land on beaches, be strong enough to carry guns, gatlings, rockets, provisions, or a large number of men, and yet they must be fairly light for hoisting up; and if they fulfil moderately all these conditions, it is absurd to expect them to sail on equal terms with boats of their own size built exclusively for sailing

Before entering into descriptions of different classes of boats, it will be advisable to make a

few remarks upon the sailing of boats in general, as the same broad principles apply to all boats with all rigs.

First of all let us consider the art of beating to windward : this, in fact, is nothing more nor less than so trimming the sails as to cause the wind to blow the boat up against the wind, and this apparent impossibility is brought about in consequence of the two well-known mechanical facts: first, that when wind blows against a sail, the resultant of its force is at right angles to the plain of that sail; and secondly, that solid bodies floating in a liquid, if acted upon by an external force, will move more or less in the line of least resistance.

Thus if "a" "b" be a boat sailing about six points from the wind, which is represented by the arrow "e." Then "c" "d" is the boat's sail, which being pressed upon by the wind at a fairly efficient angle, the resultant of that force is at right angles to the plain of the sail, or in the direction "f:" but the boat, in consequence of her shape and of her keel, offers great resistance to being driven in the direction "f," but moves easily in the direction "a," or in other words, right ahead, that being the line of least resistance; and practically it is found that a good shaped boat with a proper keel, will go several feet ahead, for every inch that she goes to leeward.



In the figure I have represented the sail as being a flat surface, which as a matter of fact it never really is, but it should always be remembered that the nearer a sail can be made to approach to a flat surface the better the boat will work to windward. The most efficient angle with the keel at which the sail can be trimmed is a matter to be learnt by experience and practice, it not only varies in different boats, but it also varies considerably in the same boat under different circumstances of wind and sea, so that it would be impossible to lay down any fixed rule for it, with the exception of the general rule that in smooth water the sheets may be

hauled flatter aft than in rough water, but the *flatness* of the sail itself admits of no variation under any circumstances, or on any point of sailing; though a flat sail is of less consequence when "going free" than when "close hauled."

Our forefathers used to consider that a certain amount of "belly" (as it is called) was desirable even "close hauled," but it has been conclusively proved, first by the famous "America" schooner in 1851, and since admitted by all seamen, that a flat sail is the best. This being the case, the first object in setting sails should be to get the sails when hoisted taut up and the sheets aft to approach as nearly as possible to a flat surface, especially avoiding a bag in the after leech; a shaking leech is even preferable to a baggy one, for if one or two cloths in the after leech of a sail shake, they will at any rate although useless be of no harm; but if the two after cloths in a sail form a bag (which is not at all uncommon) they will absolutely impede a boat, they form a "back sail" and stop the boat and drag her to leeward. The success of a sail, that is to say its close approach to a flat surface, depends primarily upon the sailmakers who cut it, sewed it, and roped it; but it also depends in no small degree upon the person who bends and sets it, and although it is impossible to turn a badly made sail into a good one, it is very easy to spoil a well-made sail by injudicious treatment, more especially when the sail is new. Perhaps the

easiest way to spoil a new sail is to haul it very taut out on the yard or gaff, then haul the sheet or out-haul very taut out, bowse the tack taut down, and then take it out in a shower of rain and get it well wet without slacking anything; this treatment will probably spoil it beyond all cure, it will stretch it unfairly and unequally, pulling it out of the shape that it was originally intended to be, it will certainly produce either a shaking leech, a slack or hollow foot, or an ugly bag in some part of the sail which it will be impossible to get rid of, and the sail will be spoilt beyond all cure. This being the way to spoil a new sail, the opposite treatment will obviously be the way to avoid spoiling it; thus do *not* haul it taut out on the yard or gaff, but let it stretch gradually and haul out the slack as it stretches; if a gaff sail on a boom, on no account haul it taut out on the boom when new, but be content to sail about with it rather baggy at first, allowing it to stretch gradually in all directions, also avoid bowsing the tack of a new sail taut down.

It is a common practice amongst yachtsmen when they get a new mainsail, to moor the vessel broadside on to the wind and set the sail slack, thus allowing it to stretch gradually and equally from the pressure of the wind; and when this can be done it is no doubt preferable to sailing about with a baggy sail for a week or a fortnight. A jib is not so easily spoilt as a gaff

sail, but this may be done by hoisting it very taut up, and then rowsing the sheet flat aft in a calm. Lug sails are generally spoilt by hauling them too taut out on the yard when new, and then getting them wet without slacking anything; and remember that the tendency of all men-of-war's men is to "bring to" the sail on the top of the yard, in the same way that a ship's square sails "are bent;" this is wrong in a boat's sail as their is no jackstay or anything to keep it on the top of the yard, the head of the sail therefore slips down in the middle of the yard, but remains up at the two ends, as the earings are secured through holes in the yard and cannot slip down, the result therefore is an unsightly and inefficient bag: this is one of the most fertile sources of spoil, and badly set lug sails; a lug sail should be "brought to" *straight along* on the *underneath* side of the yard, and the eye of the yard slings kept opposite to the head of the sail.

I have alread remarked that the principle art in boat sailing is to make a boat go to windward, and although boats are required to sail "off the wind" also, it will be found that very little skill is required to make them do so, as the natural tendency of all floating objects including hay stacks, is to blow to leeward with more or less velocity. I propose therefore to consider first the art of beating to windward.

The first and most important thing is "*trim*," for although you may have the best made sail ever turned out by the famous Lapthorn, the best shaped boat ever built by the renowned Waterman, and the smartest boat's crew that ever wet their jackets and lost their caps overboard, you will not be able to make your boat beat to windward properly if she is out of trim. It is not always a very easy matter to find a boats best trim, several trials will sometimes have to be made before it is arrived at, but as a general rule most boats sail best when trimmed a little by the stern, some sail best trimmed a great deal by the stern, some on an even keel; and some boats will not do their best unless they are down by the head, but this last is unusual, and must result from something peculiar in the shape of the boat, or in the position of the masts and sails.

In man-of-war boats where the principal ballast consists of the crew it ought to be a very easy matter to keep the boat always in trim, as men are so easily moved about, from one part of a boat to another, thus admitting of repeated trials until the best trim is found; but yet how little attention is generally paid by Midshipmen to the trim of their boats, and how often we see them sailing about with two or three men crammed right in the bows, making the boat plunge heavily, and carry so much weather helm that the coxswain or mid which ever happens to

be steering, cannot keep the boat from flying up into the wind; then perhaps a happy thought strikes "young hopeful" and he eases off the mizen-sheet, and the mizen flutters gaily in the breeze; them perhaps he wants to tack, and puts his helm down, but through the mizen-sheet being eased off there is nothing to bring the boat up to the wind with weigh enough on her to take her round, so that after hanging nearly head to wind for some time, and making a long "stern board," she falls off again on the same tack, thus "missing stays," and when young "shiver the mizen" eventually gets on board his ship he reports to the first lieutenant or commander that the 2nd cutter is no good at sailing, that she is unmanageable, and will not tack under the most favorable circumstances; whereas had his boat been in trim, and his mizen-sheet aft, and had he *sailed* her round gradually with small helm at first, instead of jamming his tiller "hard over" at once, he would probably have found that she was very handy, and went round like a teetotum.

As a rule the best way to find a boats trim is to get her "on a wind" with the sails well set, and the sheets aft, *but not too flat,* and then trim the boat with the crew, by moving them about, until the boat carries just sufficient weather helm to ensure that she will come up in the wind (though not too quickly) directly the tiller is let go, or put amidships; but it should be remembered that in trimming a boat, if it is found

necessary to bring her a little more down by the stern in consequence of her carrying too "taut" a helm, or more down by the head in consequence of her carrying to slack a helm, the proper way to do it is to move the whole body of the crew a little more forward or a little more aft, and not to put one man right into the bows or right into the stern; for it is an invariable rule in sailing, and applies equally to boats, yachts, or ships, that the principal weights should be concentrated as much as possible amidships, and kept out of the ends, but more particularly out of the bows, where heavy weights always make a vessel plunge heavily, stopping her weigh through the water, and at the same time making her very wet.

It must also be remembered that although a boat may be trimmed to perfection for sailing in smooth water, it will often be found necessary to alter her trim a little if taken out into rough water, as boats of shallow draught when pitching even in a moderate sea, lift a considerable portion of the fore part of their keels out of the water, but this does not happen to the same extent with the after part of the keel, so that the balance which previously existed is destroyed, and it will be found necessary to move some weight a little forward, as otherwise the boat's bow will "fall off," she will carry "lee helm," will in all probability—"miss stays" and become generally unmanageable, but this may be easily avoided by

judiciously moving the crew a little further forward, and thus restoring the balance.

When loading a boat with provisions or other heavy stores, care must be taken (if it is intended to sail) to put the principal weights amidships, for if either the bow or the stern are brought too low down in the water, it will be found impossible to trim her afterwards, even by putting the whole of the crew at the opposite end of the boat, and she will probably be quite unmanageable; but if she is properly stowed and not overloaded she will sail nearly as well as she did in her ordinary trim. No boat should attempt to sail when loaded with water in bulk, or even in a canvas tank, unless the tank is divided in a *fore and aft* direction; in which case sail may be carried with caution. Also remember when loading a boat with *any kind of stores* to leave a place for bailing, for although the boat may be perfectly tight under all ordinary conditions, there may be sun cracks or faults in some of the upper strakes, and when these are brought down into the water, the boat may leak badly and in an increasing ratio.

So far I have considered the trim of boats principally with regard to the disposition of the crew at ballast, but men-of-war boats also carry a small amount of water ballast in barricoes, this should as a rule be stowed nearly amidships, but if anything rather abaft than before the centre of

the boat, unless it is intended to carry a large number of stern sheet passengers, in which case it should be stowed further forward.

"Sinking ballast" may be carried in life boats without danger, so long as the amount does not exceed the weight which the boat is calculated to support when full of water, but sinking ballast should never be carried in ordinary open boats, as in case of a capsize the chance of saving life will be considerably decreased through the boat sinking, and if the water is deep the boat herself will be lost also.

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CHAPTER II.

STEERING.

Having now got our boat into trim the next thing is to steer her properly. The art of steering a boat by the wind is only to be acquired by practice, but the first requisite is attention, *strict attention*; it is a game of skill as much as cricket, billiards, lawn tennis, or any other game of that description, and hand and eye must work together.

A well trimmed boat sailing on a wind is as sensitive in answer to the hand that steers her as a light mouthed horse, and requires as constant watching and humouring.

As a matter of fact the wind is never perfectly steady either in force or direction, every puff comes a little different, and must be watched and humoured by a slight movement of the hand that holds the helm; every little wave that strikes the bow produces its effects upon the boat, which must be taken into account. After a time and with practice and close attention, these things become a matter almost of instinct, and are done involuntarily like breathing, and a good

helmsman can *feel* when his boat is doing her best, but he can never afford to take his eye off the luff of the sail by which he is steering.

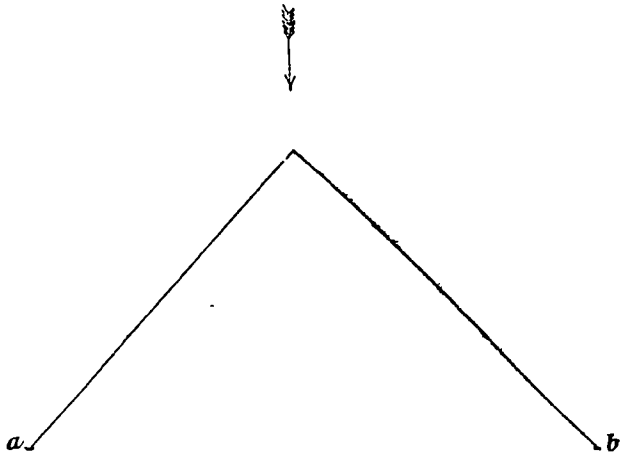
In sailing by the wind the great object is to make the boat go as fast as possible through the water, in a direction as near to the wind as possible: now if the sheets are hauled very flat aft, and the boat sailed close to the wind ("jammed" as it is called) she may "look" higher than another boat which is being properly sailed, but she will go slower through the water and make a lot of leeway; and if on the other hand the sheets are not flat enough aft, and the boat sailed too much "off" she will go faster through the water but she will not go sufficiantly to windward; the art consists in striking a happy medium between these two extremes, watching every puff of wind and taking every opportunity of luffing up to windward, at the same time keeping the boat "going" and never allowing her to lose her weigh through jamming her in the wind and shaking her sails. The trim of the sheets is a matter which requires very close attention, a boat's sheets may always be hauled flatter aft in smooth water than in rough; the sheets of standing lugs, and gaff, and sprit sails may, as a general rule, be hauled quite flat aft in smooth water, but the sheet of a dipping lug should never be *quite* flat, it is a balanced sail and is susceptable of the most delicate trimming to all circumstances of wind and weather, it will

enable a boat to hold a better wind than any other sail that has been invented, and it is also a most powerful sail "off the wind," it requires more men to work it than any other sail, but for this reason it is specially suited to men-of-war boats where there are always plenty of men; it is quicker got up or down than any other rig, and has less gear about it, but it requires *good handling*; if it is well handled a dipping lug is the most beautiful and effective rig that can be put into a boat, if badly handled it is one of the worst.

When a boat is being sailed "by the wind" the luff of one of the sails should be kept just "touching" as the term is, but never shaking. Thus sailed, and with the sheets and the boat herself properly trimmed, she will be doing her best to windward, or to speak more accurately, she will be doing well, for the art of sailing a boat by the wind is one that admits of the display of so much skill and judgment, that it is scarcely possible to imagine a boat or ship so well steered, but that she might be steered still better, and thus the most experienced helmsman will occasionally meet his match; but this ought to make all men who call themselves seamen all the more anxious and determined to learn an art which is the groundwork of all seamanship, and which affords so fine a field for the development of skill, judgment and perseverance.

One word more about steering, and that will be concerning steering in rough weather; there will then be something else to look out for besides the above mentioned points; for although broadly speaking it may be said that the object of a helmsmen (even if not absolutely racing) is to get his boat to a certain place with as little delay as possible, still when the sea is very rough he will have to humour it, and be content to go a little slower, or otherwise he will in all probability, drench everybody in his boat and half fill her with water, even if he does not swamp her outright. Now what I mean by humouring is this, suppose the boat to be sailing on a wind, and the helmsman sees an' ugly great breaking sea coming curling along on his weather bow; just before it reaches him he must put his helm down and luff right up into it, so as to take it end on, or nearly end on, as this is always the best position in which a boat can ride safely over a breaking wave; but the instant the wave has passed he must put his helm up and fill the sails, and avoid if possible losing weigh through the water, or getting stern weigh, in either of which cases his boat would not be under command, and he would be at the mercy of the waves. In like manner if a boat in order to get to her destination in a rough sea is obliged to run with the wind on the quarter, a heavy breaking sea striking her on the quarter, would be very apt to "broach her to" with the sea on her beam and very possibly

swamp her, so in this case the experienced helmsman puts his helm up, and meets the sea end on, but with his stern towards it, and although this is not so safe a position as bows on, still it would in all probability be preferable to going so far out of his way as "rounding to" would necessitate, and he will also avoid passing through the very critical position of "beam on" to the sea. It may sometimes be necessary for a boat in going to her destination to go with the wind and sea right abeam, this is the most critical of all positions, as it will take a yaw of eight points of the compass to bring the boat end on to the sea, and there may not be time to do that in order to avoid a heavy breaking sea: under these circumstances, and under the supposed condition of a short heavy sea, such as would be dangerous to a boat, the proper course to pursue if there is sea room, (and there is almost certain to be under the supposed conditions) is to "quarter" the sea, somewhat after the manner of a horse dragging a load up a hill, only it will not be necessary to make a large number of zigzags, probably one will be sufficient.



Thus if a boat wanting to go from *a* to *b* with the wind and sea in the direction of the arrow, were to take the course as indicated above instead of going straight, she would always be in such a position as to enable her to meet any particularly heavy sea in the "end on" position with a yaw of only four points of the compass; and under certain conditions this would be the safe and proper course for her to pursue; and if there were not sea room, she could apply the same principle by making a greater number of smaller zigzags.

The same principle may be, and often is, sucessfully applied even if there is no absolute danger of swamping the boat outright, but simply to

keep the passangers dry, and to avoid shipping an unpleasant quantity of water; and all those whose duty or pleasure have caused them to sail much in open boats, (but particularly in men-of-war boats,) will have had practical experience of the vast difference of comfort between sailing in a boat steered by a watchful and experienced helmsman, and one steered by an ignorant or careless one.

CHAPTER III.

MEN-OF-WAR BOATS.

In considering a few of the different classes and rigs of boats, I propose to commence with men-of-war boats, then to notice one or two of the coast of England boats, and then to describe briefly one or two foreign boats, some of which are very interesting and instructive as being peculiarly adapted to the different harbours and seas in which they are used.

It will not be necessary to enter very deeply into the construction of boats, or to treat at any length of the materials of which they are built; as this little book pretends to be more concerned with boat sailing, than boat building; still a few remarks as to materials may prove interesting, although I know I am treading on dangerous ground, and speaking from a very limited experience, poaching, in fact, upon brother "Chips'" domain, and very likely to be tripped up by his chalked line, or to stumble on to the "business end" of one of his copper fastenings; still it is very desirable that those who sail about in boats should know whether they are built of iron, wood, or papier-maché, in order that they

may be able to decide promptly in case of accident, whether the hole is to be stopped with a rivet, a cork, or a postage stamp, as the case may be, so here goes.

Launches and pinnaces in the Navy are now all built upon the diagonal plan, as it is called: in this plan of construction there are two thicknesses of planks running diagonally from gunwale to keel, and crossing each other at right angles; they are of course fastened together, and thus support each other in every direction; the ordinary timbers or ribs of the boat are entirely dispensed with. This plan is light and strong for large open boats, but it is very difficult and troublesome to repair a hole in it. Mahogany seems to be one of the favourite woods for building boats on the diagonal plan.

The other two plans of construction for open boats are the "clinker," or "lapstrake," and the "carvel." The "clinker" is perhaps the commonest of all, and there is a great deal to be said in its favour, it is light in proportion to the structural strength which it gives, as the planks support each other, and the timbers can be made very light and far apart in proportion to the size of the boat; it is rather a troublesome build to repair a hole in, as several planks have generally to be disturbed in order to do so; some woods are also very liable to split in this build. With regard to the best material for building "clinker built"

boats of, there must always be a great variety of opinion; the frames, knees. gunwales, &c., should be made of ash, oak, Canada elm, or some species of hard wood, but the question of the best material for planking is open to argument. Yellow pine is strong and light, but it is rather liable to split at the edges where the planks overlap each other, it is not very durable and will not stand a great deal of hard usage. English elm plank is the most durable of all woods for boat building; the more you soak it in salt water the tougher it seems to get, the grain is crooked and it is not at all liable to split, and it will stand a tremendous lot of bumping on rocks and hard usage of all sorts, but it soon gets sodden with water, and goes on getting heavier and heavier year by year, and after seven or eight years the weight of an elm-built boat will be out of all proportion to her original weight, and although the plank of which she is built may remain sound, the boat herself will in all probability be structurally worn out, more particularly if she has been much hoisted and lowered from a ship's davits; her increasing weight will have assisted to drag her out of her original shape she will either be "hogged" or "sagged" according to the position of the slings, and she will probably be a most unsatisfactory boat either to pull in or to sail in, or to do anything with but to bump upon the rocks, and of this latter she will stand a great deal. The question then arises whether it is worth while building a

boat of an exceedingly durable material which shall remain sound after the boat is herself structurally worn out, bearing in mind that old boat plank is utterly useless for building a new boat.

My own opinion is that it is not worth while to do so, either on the grounds of economy, or efficiency; for when a boat once begins to get out of shape, which must and does occur in a very few years to any boat built reasonably light, and constantly hoisted and lowered from a ship's davits, and exposed to the other rough vicissitudes of sea work, she becomes in need of constant and expensive repairs, and I have frequently seen as much time, labour, and material expended in patching up and keeping an old boat sea-worthy, as would have sufficed to build two new ones; so that I think too much value is placed upon the durability of elm plank, and that it would be better to build ship's boats of some cheaper and lighter material, and not expect them to last more than three or four years; for when once a boat becomes in need of constant repairs through being structurally shaken and dragged out of shape, the cheapest and best plan would be to burn her and get a new one; we should then always have comparatively new boats in use which would be lighter, would pull and sail better, and would be altogether more efficient and serviceable.

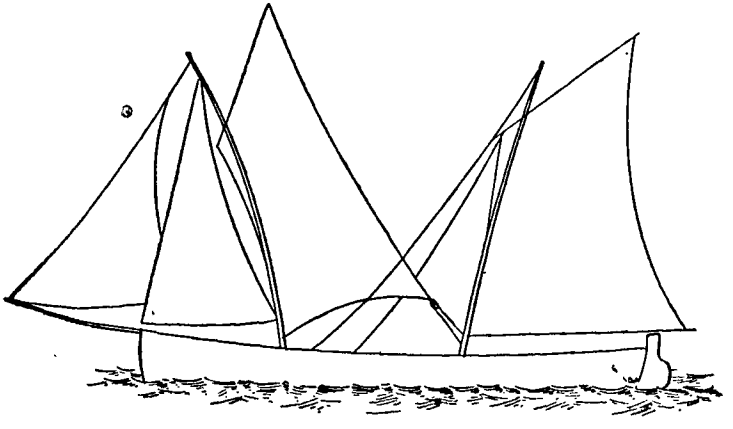
The "carvel" build seems to be more of a favorite with continental nations for open boats than it is in England; in this form of build the timbers are required to be very strong and close together, the planks giving no support to each other as they do in the clinker build; but all kinds of soft and light woods, which would split in the clinker build are suitable for planking a carvel built boat, as the strain is all on the timbers, and the planks do nothing but keep the water out; it presents a smooth surface to the water, which is an advantage, and it is easier repaired than either of the other modes of construction; but strength for strength it appears to be slightly heavier than either of them, and it is not a favorite in England.

I trust that this slight digression upon "construction" may be excused as it is an interesting subject, but one that I do not feel competent to enter into exhaustively.

I have said that elm plank is the most durable timber for boat building, but I should have excepted Bermuda cedar, which I believe is practically indestructable in salt water, but it is too scarce and expensive to come into general use for boat building.

The old fashioned rig for launches and pinnaces was two standing lugs and a staysail, and a jib on a bowsprit; the foresail was a good deal larger

than the mainsail, which in fact was little more then a large mizen stepped at the after thwart: this was not a bad rig for a pinnace, and some boats did well under it, but for the larger launches the foremost was rather a heavy spar, so it gradually became the custom to make the foresail and mainsail about the same size, and the masts the same height, and this was found to be more convenient; but this rig was peculiarly liable to an objection to which all rigs are more or less liable, and that was the great facility with which the sails could be *badly* set, in fact it was a very rare occurrence to see them otherwise *than* badly set; this arose in a great measure from the difficulty of staying the mast properly; the head sails dragged the foremast over the bows, and the main-mast from having no permanent stay was dragged over the stern by the main sheet; so that the boat usually presented this appearance.



The result upon the sails being that the mainsail was always baggy and shaking; and the foresail was dragged out of its shape, and did not set properly; so that it was not surprising if a flat bottomed bluff bowed boat under these conditions, and without any ballast, made rather poor work of beating out to Spithead against a flood tide and a short chopping sea.

The cure for this, as far as the foresail is concerned, is to see that the fore runners are hauled "hand taut" before the head sails are hoisted, remembering also that the head sails in this rig take the place of a fore stay, so that it would consequently be unwise to lower both head sails suddenly if the fore sheet were flat aft, in anything of a breeze, as the jerk would most likely send the foremast over the stern.

The complaint of the mainmast is more difficult to cure; the stays being shifting stays, in order that the lee one may be let go to clear the foresail, it is found in practice that the mainmast is never properly stayed, and the result is that the mainsail is never properly set: the only effectual cure for this is to have a wire stay at a "short peak," or in other words, at a small angle with the mast, and secure it to a bolt clenched through the keel of the boat: this stay is a standing one, and is not let go in tacking, the stay and bolt must both be strong, as from being at a "short peak" there is a great

strain on them; it is necessary to have them thus, for if the stay were carried too far forward it would hamper the foresail in tacking.

The foregoing rig is being gradually displaced in the navy by the so-called "de Horsey rig;" which is, I think, a better and more serviceable rig. It is nothing more than an ordinary gaff sail without a boom, and a foresail on a stay without a bowsprit; but the credit is undoubtedly due to Admiral de Horsey for having found out the best dimensions for these sails, for having adopted the most simple and practicable fittings, and for having brought them into use in man-of-war boats.

Admiral de Horsey has most kindly furnished me with a description and sketch of his rig, so that I cannot do better than describe it in his own words.

He says—"The rig which I recommend for "launches and pinnaces (not having steam power) "is that commonly called by my name, and con- "sists of one mast, gaff mainsail, and staysail, with "in addition a topmast, crosstree, gaff topsail, and "stay topsail for special purposes. It should be "clearly understood that the mainsail and staysail "alone constitute the regular working rig. The "topmast and all gear belonging to it although "useful for distant cruizing should never be allott

"except for special services, or for pleasure sailing "under competent management, and then only "in light winds."

"For speed, handiness, getting up and down "mast, getting gun up and down, loading from "a wharf, laying out anchors, &c., nothing can beat "this rig. If properly fitted, one minute is ample "time for getting under sail from being under "oars with mast down and vice versa."

"The rigging should consist of a stay long "enough to reeve through the roller at the stem "when the mast is down, a pair of shrouds each "side, the foremost leg setting up with a lan- "yard abreast of the mast, and the after leg, or "pendant, fitted with a double block half-way "down the mast, so as to form a main tackle, "and to set up two feet abaft the foremost shroud, "no runners are required, the main tackle answers "better: in running hard it is well to hook the "lower block of the main tackle to a bolt further "aft, but this will rarely be found necessary."

"Let there be no iron blocks, or iron hoops, "no wire rope (except perhaps wire cord for top- "mast backstays) no iron crosstrees; in short "nothing in an open boat should be of metal, "where hemp and wood will answer equally well "and better."

"There should be no boom, or bowsprit, or "mizen, all these are impediments for real work

"(as you will find if you have to send a stream "anchor and cable to a driving ship on a dark "night when the over-worked steam pinnace is "not available, or has not steam up.) A mizen "is most troublesome, either a mizen, or a boom "to the mainsail necesitates a jib to balance the "sail, a jib necessitates a gripe, which latter is a "serious detriment when landing on a beach, and "adds to the risk of beaching in a surf, or going "through a surf at all."

"The demensions of spars for a 42 foot launch "are as follows:"—

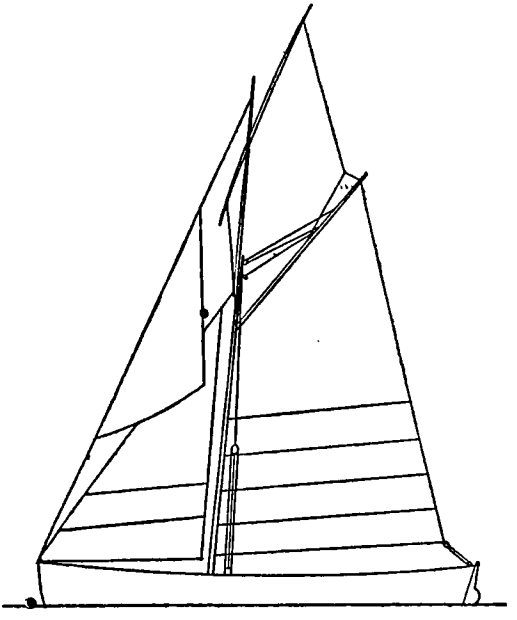
	ft.	in.
Mast, extreme length ...	34	6
,, head ...	3	10
,, housing ...	2	4
,, size at partners ...	0	7
,, ,, hounds ...	0	6
,, rake 1¼ inch to the foot		
,, position, 17 feet from fore side of stem to fore side of mast		
Gaff, extreme length ...	19	6
,, greatest diamater ...	0	4
,, least ,, ...	0	2
Topmast from lower side of of fidhole to stops ...	17	9
Topmast pole ...	1	6
,, size at cap ...	0	3½
Topsail yard ...	21	3
,, diameter at slings ...	0	3¼
Crosstree, length ...	9	4

"The method of fitting the partners which I "have found best is as follows: a hook clamp,

"fixed on the mast, hooks on to a bolt which ties "the partner carlings together. Guide pieces are "fitted, one on each side, from the inside of the "carlings to the step, and shaped to fit the heel "of the mast at all parts of the sweep. The "mast when upright is locked by a drop pawl "on a hinge, which pawl has an eyebolt and "lanyard for lifting it when getting the mast "down. By this method a launch's mast may "be raised or lowered with ease and free from "risk, however much the boat may be rolling in "a sea."

"Whatever rig may be adopted for boats of "men-of-war, I assume it to be a 'sine qua non' "that no iron ballast or sand ballast, or any ballast "except water, the boat's gear, and the crew, is "admissable. "For boom boats casks painted "and marked for each boat are preferable to "barricoes."

de Horsey rig.



42 *foot Launch, Scale* $\frac{1}{10}$ *inch to the foot.*

The above is Admiral de Horsey's very lucid description of his own rig, and a very practical and handy rig it is. The only point which I do not endorse is that "a mizen necessitates a

jib to balance it, and that a jib necessitates a gripe." It appears to me that if the jib to balance the mizen is only made large enough to effect that purpose, the putting on of a gripe would again disturb that balance. But I think that any extension of the forefoot in the form of a gripe is always objectionable in a boat, it is also unnecessary; for the proper balance can be secured by other means.

It has been very pertinently remarked by some one "that a boat goes to windward *in spite of her jib*;" and it is undoubtedly true that a large jib carried on a wind in a boat, almost always does more harm that good.

A gripe is not only dangerous in beaching a boat, or going through a surf, but it almost invariably makes a boat "hang in stays" and generally unhandy. Any additional keel that is put on to a boat should be put on either in the shape of a "Camber" keel, rounding off to nothing at both ends, or else in some form of centre board; both these descriptions of keel make a boat very weatherly, and increase instead of decreasing her handiness.

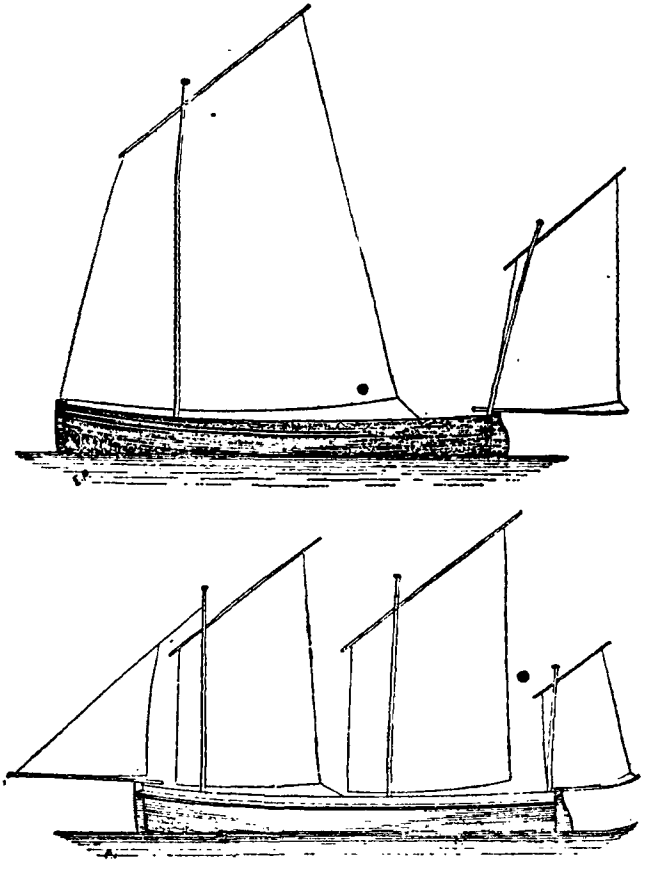
I may here explain for the benefit of my readers, who, although they may be cunning boat sailors, are not conversant with the terms used on board men-of-war; that a boom boat does not

mean a boat carrying a boom. The term is applied to the larger boats carried by men-of-war, and which like the "long boat" of a merchant ship are stowed "in-board" upon the spare spars, or *booms* as they are called, of the ship herself and hence the name boom boat.

CUTTERS.

The dipping lug foresail and standing lug mizen of the service cutters is a splendid rig, but it requires good handling, when properly handled it is superior in most respects to every other rig for boats up to 30 feet in length, but after that size the foresail becomes rather a large sail to handle in an open boat; though the decked Penzance fishing boats carry this rig in vessels up to 30 and 40 tons, and are splendid sea boats and very close winded.

I have always understood that the dipping lug and mizen rig was introduced into the Navy, either by the present Admiral of the fleet, Sir Thomas Symonds, or by his father, the famous designer of ships, which bore the name of "Symondites" in the Navy for many years: be that as it may, it appears to combine more good qualities for the ordinary working boats (not carrying a gun) of men-of-war, than any other rig, with perhaps, the single exception of the French rig.



Here then are the two rigs shown together, each spreading about the same area of sail, but

on different plans. The advantages of the English rig, are that it is quickly got up or down, there is very little gear about it, and there is no bowsprit, the absence of which is a great advantage in going alongside a ship; but the foresail is a large sail, and being a dipping lug requires good handling, especially in tacking. It will be observed that the French foresail and mainsail are also dipping lugs, but the tacks of them are so close to the mast in proportion to the length of the yard, that the boat is quite under command with the sails "aback" or to windward of the mast, though of course she sails better with them to leeward; still it is a great advantage in making short tacks to be able to carry them on either side; another advantage in the French lug is that from having so little of the sail before the mast they are much more easily dipped than the English lug; very little of the halyards is lowered, and the yard is swung round with great ease: the French sailors work them very smartly, they are generally excellent boatmen, and from being recruited from the fishing population, they are accustomed to boats from their boyhood, and are much more at home in them than our own men.

The English rig will probably sail closer to the wind than the French rig, the fact of having the principal part of the canvas in one large sail, instead of dividing it into two sails of about equal size, ensures holding a better wind; thus cutter yachts always go to windward better than

schooners, but the schooners generally have the best of it with a beam wind, or "on a reach" as it is called. In order that a dipping lug should be at its best it ought to have nothing *before* it, not even a small jib, for it is an *invariable* rule that the draught out of one sail will always affect the sail next abaft it, no matter how clear of each other they may appear to be: and this is one of the disadvantages of the French rig, the jib will affect the foresail, and the foresail will affect the mainsail, whereas in the English rig the luff of the big dipping lug, which is the principal sail in the boat, will cut clean into the wind, without anything to obstruct it or to cause a draught, and the mizen with its sheet hauled flatter aft than the foresail, keeps the boat up to the wind.

There is some difficulty in "heaving to" with a dipping lug and mizen on the English plan, but it can be partially effected by easing off the foresheet, keeping the mizen sheet aft, and the helm more or less "a lee," but the boat is very apt to come round on you if you don't keep a sharp look out on her; she is sure to forge ahead a little, and if the wind is light she is liable to get "in irons." A boat or ship is said to be "in irons" when she is not under command, through flying up in the wind and losing her weigh; it generally occurs in very light winds; the boat's head comes up about two points from the wind, and the wind blows along the sails without any

effect; probably one of the after sheets is a little flatter than the others, and the boat having no weigh through the water the rudder is without any effect; and sometimes a boat will remain in this predicament for a considerable time, if proper steps are not taken to get her out of it. If there is a jib or stay foresail, the sheet of it should be hauled up to windward, and the main and mizen sheets let go and overhauled, and she is sure to "pay off" at once. In a cutter with a dipping lug and mizen, the mizen sheet should be let go, and one of the men should take hold of the foresail abreast of the mast and bear it out to windward without lowering the sail, this will almost always be sufficient to get the boat out of the wind and under command. If a boat is out of trim through being down by the head, it will be found that she will get "in irons" on every possible occasion: the remedy for this is to trim her, by moving some weights, or some of the crew, further aft. *The weight that a man can move with the greatest ease is his own body.*

In order to reef a dipping lug quickly, on a wind, the sail should be lowered just low enough to hook on the tack and sheet to the reef cringles, then hoist the sail up, and let one or two hands tie up the reef points afterwards, they can reach them easily, but if not racing or in any particular hurry, it is perhaps better (especially if the crew are not well trained) to take in the whole reef snugly before hoisting; in shaking

out a reef however it is always advisable to cast off all reef points before starting tack or halyards, and by doing so very little time need be lost. The mizen is a more difficult sail to reef, it is outside the boat, and hard to get at, so the shortest and best way is to lower it down, reef it properly and reset it.

With regard to the standing lug mizens of cutters, there is a diversity of opinions, as to whether the long bumpkins, or the short bumpkins with a boom is the best; there is something to be said in favor of both fittings, the former is the quickest got up, or down, the sail is easiest reefed with it, and it sets a fairly flat sail on a wind; but on the whole I prefer the short bumpkin, it may be a little more trouble, but the sail sets better with it, and when the sheet is eased off for going free it sets a far more effective sail than the long bumpkin.

Service cutters sail well with there own dipping lug foresail, and a large standing lug mainsail stepped at the after thwart; but this will come more under the head of racing:

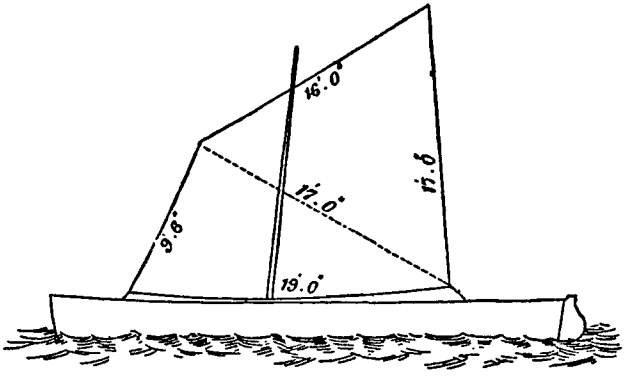
GIGS.

The service six oared galleys and gigs are generally rather heavy boats, and do not pull well, but they sometimes sail very well if properly rigged.

There is probably to be seen a greater variety of rigs for gigs than for any other class of boat in the navy; one reason of this no doubt is, that the captain of a ship looks upon his gig more or less in the light of a private boat that he can do what he likes with, and thus one sees all kinds of fancy rigs, some of them very good, and some of them rather unpractical; but there is an advantage in all this, as it gives the rising generation a chance of judging for themselves, and drawing their own conclusions concerning the merits of the respective rigs, and there is perhaps no subject connected with the sea, about which there is, and I presume alway will be, such a great variety of opinions as there are about the best rig, for each particular class of boat: this no doubt arises in the case of gigs, from the fact that different people require their boats to do different things; one man does not like sailing if he can help it, never sails for pleasure, and only hoists his sail when he has to go a long way with a fair wind; another man never loses an opportunity of sailing, when there is any wind at all, fair or foul, so that he wants some rig that will beat to windward tolerably well; and between the two extremes, there are all sorts of intermediate people, who like sailing at times, &c., &c.

Now when a boat is required for rowing and sailing alternately, I do not think any rig can

be considered quite satisfactory unless it can be got up and down quickly, and for this reason, one mast and one sail appears to be a very appropriate and handy rig for a gig; there is very little gear about it, it can be got up and down in a few seconds, and if the mast is properly placed in the boat, and the sail properly made and properly set, a gig will sail almost as well, not only off the wind, but to windward also, as with any of the complicated and troublesome rigs, and does *not* require a mizen to make her tack; in fact mizens in gigs are a popular delusion, and only rendered necessary through the mast being placed wrong in the boat.



30 FOOT GIG.

Scale $\frac{1}{12}$ *of an inch to a foot.*

Mast, 17 feet.
Yard, 17 feet.

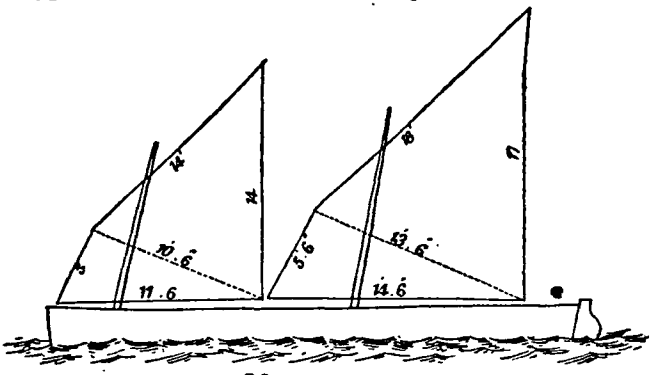
I have found a sail of the above dimensions to answer well in a 30 foot gig. It is rather a large sail and should have four "two foot" reefs in it. When it is required to tack with a lug sail having such a long yard, the best plan is to lower the sail down altogether, unhook it, and lift the mast over the sail; when the crew get accustomed to it, it is as quick a plan as any other, and the most practicable with such a long yard.

There should be no shrouds, the halyards taken to windward serve to support the mast sufficiently, and they should be fitted with a whip and pendant, and not the long halyards with the block on the traveller, which is not a proper support to the mast, and tends principally to buckle it over the bows. The halyards should be taken at least two feet abaft the mast, as the tendency of all dipping lugs is to pull the mast forward.

It is necessary with a sail of the above shape to have three tack hooks on each side of the boat's bow, about six inches from each other; one for the whole sail and 1st, one for the 2nd and 3rd reefs, and one for the close reefs: for in consequence of the sloping direction of the luff of the sail, it will be found that if the tack is not brought further aft as the sail is reefed, that the clew will come too low down in the boat, and

the sail will not set properly. It is a very common mistake with regard to boat's sails (made too by people who ought to know better) to cut and hack a sail that is found not to set properly, instead of altering the position or the rake of the mast, or the position of the tack or sheet hook, which would, in nine cases out of ten, be the proper course to pursue; this applies to small boats only, and not to yachts or larger vessels.

Another good rig for gigs is two dipping lugs with short masts and long yards, and the luff of the sails so short as to allow of their being dipped without lowering the halyards



30 FOOT GIG.

Scale $\frac{1}{12}$ *of an inch to a foot.*

Foremast 13 feet.
Foreyard 15 „
Mainmast 14 „
Mainyard 19 „

In the above rig the masts should be very stout, and well supported at the partners, as there are no shrouds, and the halyards (single) are taken up and down the mast, and rove from forward aft, as the foremost yardarm is dipped in tacking: single sheets spliced into the clews of the sails are sufficient, but two small jiggers are necessary for hauling the tacks of the sails taut down in order to make them set properly. Both tacks lead amidships; the main sheet travels on a horse abaft the back-board, but the fore sheet must be shifted over each time, as it is not practicable to work it on a horse in that part of the boat. I have found that a 30 foot gig will sail slightly better upon all points of sailing with this rig than with a single lug; and one advantage of it is that the sails can be carried to windward of the masts as in the French rig previously mentioned; this is a great advantage in making short tacks, though of course the boat sails better with them in their proper position, and they are very quickly and easily dipped when the crew have had a little practice at it, as the halyards are not started at all when once the sail is hoisted; the luff of the sails must be short enough (about 5 feet) to allow a man to reach the foremost yardarm comfortably, and the sail is then swung round with great ease. This is a very snug rig when reefed down, as the sails come to a couple of low lateens. A spare mast hole should be fitted in the middle of the boat, so that

in very bad weather one mast can be stepped there and a single lug carried.

There are several other rigs more or less suitable for gigs, such as three lateens with short masts raking forward, and very long yards, and no luffs to the sails. This rig is very difficult to reef, and the yards must be of great length in order to spread a proper amount of sail, so that it can scarcely be considered a handy rig.

Sprit and gaff sails are not suitable for gigs; they are too pressing, and seem to bury gigs and boats of small stability.

Two leg-of-mutton sails and a jib is a rig which appears to answer well in some gigs; the heavy life boat whalers seem to do well under it; the French "baleiniere" carry it, and it is a pretty rig, but it is not a rig that I have ever taken a fancy to for any class of boat, the sails are, I think, unneccessarily lofty for the amount of canvas in them; all the upper part of the sail has great effect in heeling the boat over, at the same time that it has very little propelling power. so that I think the canvass can be better disposed in a lower plan of sail, although there is no doubt but that a well-made sliding gunter sail can be made to set very flat indeed, and the short, broad, deep Bermuda boats do well under this form of sail.

JOLLY BOATS AND DINGIES.

"Jolly boats" and "Dingies" are generally fitted at the Dockyards with lug sails, but it is just at this point in the size of boats, and at this particular form of short, broad boats, that the sprit sail comes in handy; and there is no more useful and appropriate rig for boats of 18 feet length, and under, (with good beam) than a sprit and jib. A sprit-sail is a very flat and powerful sail, but when the sail gets too large, and the sprit consequently too heavy for a man to handle it with ease, it ceases to be a convenient sail, and the gaff sail takes its place for standing rigs. One remarkable exception where the sprit sail is used in large vessels, is the case of river barges, which are fitted to lower their masts for the purpose of going under bridges; some of these are large vessels of several hundred tons burden; the rig is peculiar, the mast which is comparatively short, works on trunions in a tabernacle, and the sprit, which is a very large and heavy spar, is permanently attached to the mast head at the proper angle by a strong piece of rope; the mast and sprit are lowered simultaneously by means of a powerful purchase upon a very stout stay; by this means a large spread of canvas is obtained upon a comparatively short mast; but this rig is quite an exception to the general application of the sprit, which, as I have already observed, is only suitable to small boats. One objection to the sprit sail is that it

is a difficult sail to reef, and if the sprit is taken out of the sail altogether it reduces the sail too much, and probably renders the boat unmanageable. The snotter which supports the heel of the sprit should be made very strong, as if this carries away the sprit is very apt to go through the bottom of the boat, as it comes down point foremost with great force.

The split lug is an abominable and unsightly rig, and is only fit for the "long boat" of a Portuguese merchant ship.

The standing lug is not a particularly good sail as the principal sail in a boat, it is not such a powerful nor such a lifting sail as the dipping lug, neither is it such a weatherly sail, but it comes in handy for mizens, and is also not a bad sail for a mainsail with a good large dipping lug in front of it; but this latter applies more to larger boats than to jolly boats and dingies.

A "sliding gunter" mainsail and jib may be used as a "fine weather rig" in a dingy, but it necessitates a long boom, which is dangerous and always to be avoided in an open boat.

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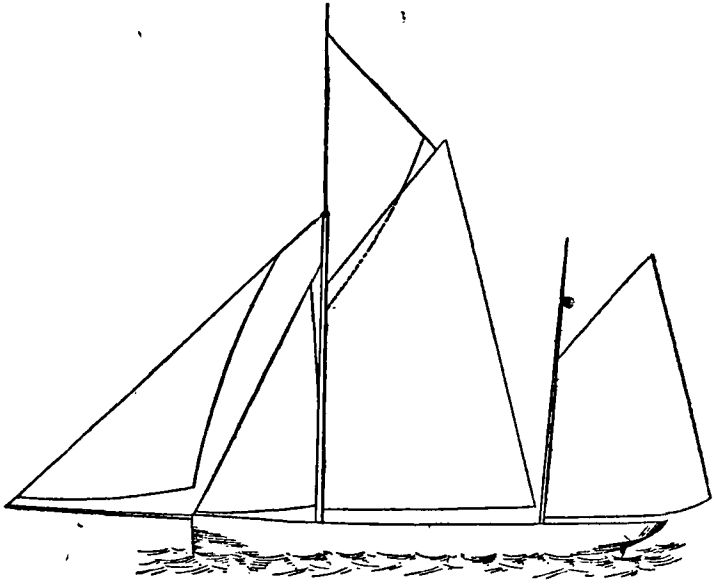
CHAPTER IV.

ENGLISH SHORE BOATS.

By the term "shore boat" we understand all boats that are not attached, or intended to be attached to ships or yachts; this, of course, includes all fishing boats and it must inevitably be the case that fishermen, who are almost continuously employed at sea in boats of all sizes, should become splendid seamen, and learn by experience (the best of all masters) the most appropriate and most handy rig for each description of fishery upon which they are employed. The two principal fisheries on the English coast are the "trawl" and the "drift net" fisheries. The usual rig for the trawlers is the "smack" rig, gaff mainsail, foresail on a stay, jib, and gaff topsail; the same, in fact, as English cutter yachts. Some years ago these vessels did not exceed 30 to 40 tons burden, and although not fast, they were fine seaworthy vessels, decked, and able to keep the sea in all weathers: but in consequence of the increased demand for fish, and the greater facilities offered by the railways for its transport to all parts of the country the trawling business has greatly increased, and much larger vessels have been built for prosecuting it; these vessels now range as large as 70

and 80 tons, and are built on finer lines, have good speed and are fine sea boats. The larger ones are "ketch rigged:" it was found that the mainsail and mainboom in a vessel of 80 tons were too large and unhandy in the ordinary smack rig, so the ketch was adopted; it is something like the rig known as the yawl rig, only that the mizen is larger and the mizenmast steps several feet from the stern, instead of right in the stern: this enables the size of the mainsail to be much reduced, which must be a great advantage in bad weather.



Ketch Rig.

The mizen mast must be stout, and the shrouds carried as far forward as is consistent with clearing the main boom, for it can have no standing stay to support it.

The smack or cutter rig is to well known to render a sketch necessary.

These large fishing vessels scarcely come under the head of "boats;" so we will pass on to the drift net fishing boats.

The drift net fishing is principally carried on in luggers; they are large vessels too, and decked; though not so large as the trawling smacks; their usual rig is a dipping lug foresail, and standing lug (or working lug, as fishermen call it), mizen, with a mizen topsail. The following description of the Yarmouth luggers is taken from a little book on the sea fisheries of Great Britain and Ireland, by E. W. H. Holdsworth :—

"All the vessels used in the Yarmouth fishery "are decked; the largest of them about 36 tons, "N.M." (or new measurement) "being 52 feet on "the keel, with 17 feet beam, and 7 feet depth of "hold. They are lugger rigged, with two masts "only, and carry a jib, a large dipping fore lug, "and a working mizen and topsail. The mizen "mast is always kept standing; but to enable "the vessel to ride easier when fishing, the large

"foremast is fitted so as to lower backwards, "on the same principle as may be seen any day "in the Thames barges, or in vessels which have "to pass under bridges in inland navigation. The "mast in these Yarmouth luggers is, however, "not lowered completely on deck, where it would "be very much in the way when the nets are "being hauled in, but is kept for the greater part "of its length at such a distance from the deck "as to allow of plenty of room below it for the "men to move about and work. It is supported "about the middle by a broad upright piece of "wood called a 'mitch board,' and which has a "crutch at the top on which the mast rests. The "same kind of support for the mast is used in "all drift-fishing boats of any size, whether "decked or open, but it is not always of precisely "the same form."

PENZANCE LUGGERS.

The Penzance luggers carry no jib, but the tack of the fore lug hooks to a short bumpkin which projects a foot or two beyond the bows.

The following description (abridged) and the sketch are taken from the "Field," of May 4th, 1878:—

"Penzance luggers enjoy a very considerable "reputation for weatherliness, and it has even "been said that in this quality they exceed the

"famous cutter yachts of this kingdom. Be this "as it may, there is no doubt that with two "large and well-cut sails, a sharp entrance and "equally sharp run, they are highly adapted for "sailing by the wind. They vary in length from "40 to 52 feet length of keel, and have a good "proportion of beam, usually a little less than "one-third the length of deck, or about 0.3 of "that length. The greatest beam is on deck, the "turn of the bilge is very easy, and the floors "nearly straight, with but little dead rise. The "displacement of the boat is comparatively small; "and although the greatest transverse section is "ahead of the centre of length of load line, yet "is the centre of buoyancy a little abaft that "centre. The displacement of the fore body, and "the displacement of the after body are thus "nearly equal, and this is accounted for by the "more or less rake given to the mid-section (so "that practically the mid-section is not so far "forward as the position shown in the drawing) "and to the steepness of the buttock-lines aft and "the lightness of the draught forward. * * * "* * * * It is said that the Penzance luggers "are wonderfully dry in a head sea, and this "they probably are, but they are particularly "lively, and anyone unaccustomed to them can "neither stand, sit, nor lie down in them. They "have long easy lines; an almost perfectly "balanced fore and aft body; no weight in the "ends; no heavy bowsprit or boom, or rigging; "and not a large weight of ballast to carry. The

"mast, it is true, is stepped rather far forward, "but the absence of a bowsprit more than com- "pensates for this: and whilst it may increase "the momentum acquired during pitching and "ascending, it does not cause them to plunge "their bows under. A smaller class of lugger, "built on the same lines, but about 30 feet on "the keel, for the pilchard fishery, are open in "the middle and only decked fore and aft. One "of these boats went to Australia in 1848, with "five hands for the 'diggings.' She called off "the Cape and took the mails to Melbourne, "actually beating the regular packet, although "off the Horn she had to make a raft or floating "anchor of her spars to ride to during a heavy "gale. * * * * * * The rig it will be "seen, upon reference to the sail plan, consists of "two lug sails, usually made of cotton, and "tanned with oak bark and catechu. The fore "lug has to be dipped in tacking, but the mizen "is a working one, and requires no dipping, the "tack being made fast at the mast. There is no "rigging to either mast beyond a burton to the "foremast and a stay to the mizen. The burton "is brought to windward of the mast with the "tie tackle.

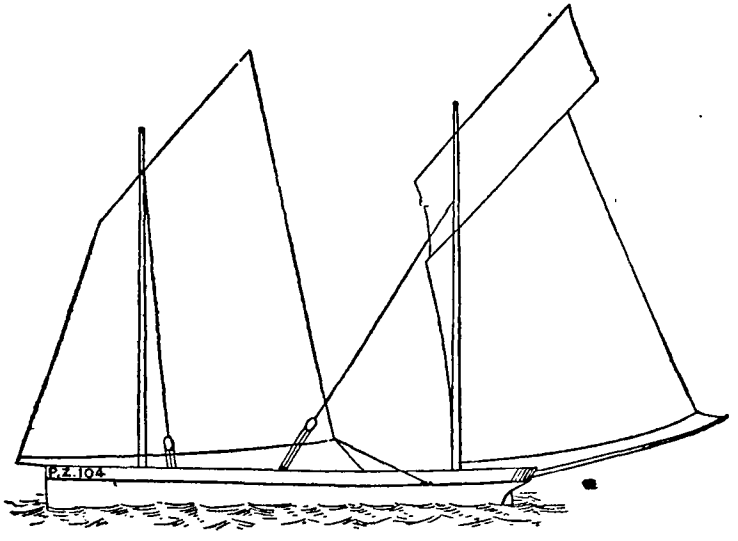
"The sails are seldom reefed and they are "made with only one reef band. When it is "necessary to shorten sail, the mizen is shifted "forward and a smaller mizen set; and this "shifting goes on until the small "watch"

"mizen (used when riding to the nets with the "foremast down) is reached. The boats are "usually provided with the large fore lug, and "three mizens, besides the watch mizen. They "cannot very well be hove to, and have to keep "'trying' or scudding; however, it must be a "heavy gale that causes them to 'up helm,' and "then no craft of similar size afloat can excel "them in running for the land.

"The sail is hoisted by a chain halyards called "a tye, and a tackle or purchase consisting of two "double blocks, the fall leading from the lower "block. The sheave hole at the masthead for "the tye has only a 'dead sheave,' that is a half "sheave fitted to the hole. The mast traveller is "two half hoops joined together by eyes, and they "are said never to jam. The tack of the fore lug "is hooked to the short bumkin outside the stem "head, but when the other mizen lugs are shifted "forward they are hooked to the stem head. The "fore sheet tackle is hooked to an out-rigger out-"side the wales, just abreast of the mizen mast.

"In tacking, the sheet is unhooked from the "sail as the helm is put down, as the boat comes "head to wind the halyards are eased up, and "the after leech of the sail hauled down upon "until the after end of the yard or peak can be "shifted round by the fore side of the mast; the "tack is never started. The sail is gathered in "by the foot and leech and passed round the fore

"side of the mast. By not letting go the tack "the fore part of the sail acts as a jib, and assists "in paying the boat's head off. If the boat "does not pay off readily, the foreyard is kept "in to the mast so that only the fore part of the "sail can fill, and the mizen sheet is let fly."



Penzance lugger.

It is not necessary to give the demensions or the lines of the vessel as given in "The Field" as this little book only professes to be a guide for boat sailing and not for boat building.

PORTSMOUTH WHERRIES.

The Portsmouth wherry is so familiar to most people who are at all connected with the sea and boats, that it will not be necessary to give a very long or elaborate description of them. The general features are, that they are sharp at both ends, have fine lines, and a rising floor, that is to say that their floor is less flat than is usual with open boats, this makes them crank under sail, and they are as a rule very much "under sailed" in proportion to their size, and nearly all of them carry a small quantity of iron ballast, which is in itself dangerous, but they are so well handled that they rarely capsize; and in all probability most of the wherry accidents which have occurred at Portsmouth could be traced to overloading them with drunken men.

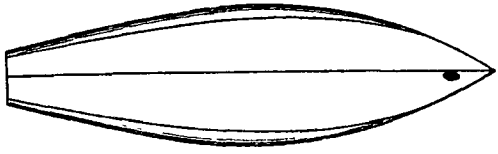
Nothwithstanding that their sails are generally small in proportion to the size of the boat, they sail fast in consequence of having such fine lines; and the rising floor gives them a greater draught of water, and makes them very weatherly. The rig is a sprit mainsail, a foresail, and a small sprit mizen carried inboard and not over the stern after the manner of most mizens: it is a handy rig when the sails are small; and well adapted for beating to windward; they are usually handled by one man.

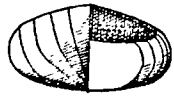
The steam launches are rapidly shouldering them off the water, and the trade of a *bona fide*

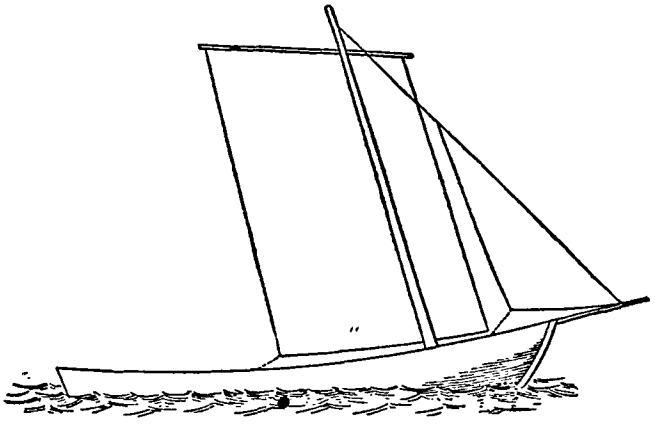
waterman is not a flourishing business: ere long we shall probably see the model of a Portsmouth wherry presented to the South Kensington Museum, and preserved there as a curiosity.

COBLES.

There is a boat used on the North East Coast of England called a coble which is of a very peculiar build. I am indebted to Commander R. S. Hunt, R.N., the inspecting commander of coast guards at Berwick for the following short but graphic description of the cobles. "The "cobles are open boats and flat bottomed, they "are built expressly for a flat beach; they are "used for line, and crab and lobster fishing: they "are from 18 to 20 feet on the keel, and from "2 to 2½ tons, the rig is a lug and jib."







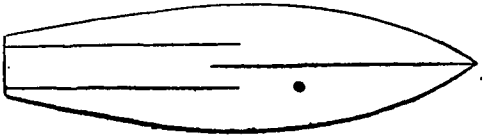
Coble.

"Splendid boats on a wind, but very bad to "run: steered by the sheets and a long tiller; "beached stern first and then put on wheels and "taken above high water mark: they are only "used in fine weather, carry a great deal of ballast, "and if they should happen to meet with an "accident and fill, they sink immediately, as "was the case a short time ago with a Beadnell "coble, when the three men were drowned."

The accompanying sketches will give an idea of the peculiar shape of the cobles; the leading characteristics of them being as follows—High forward, and low aft, great "tumble home" of the sides, greatest beam forward, no "run" and consequently no "dead wood" aft; the transome

or flat part of the stern being almost the same shape though smaller than the midship section of the boat, and carrying the fulness of its body right down to the bottom of the boat.

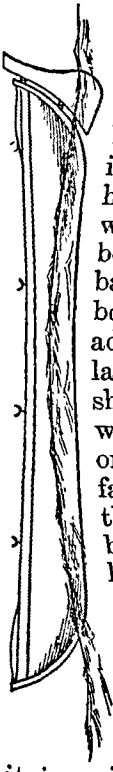
The centre keel of the boat only comes about half-way aft from the stem, and then stops; and two side keels then run aft to the stern thus:—



Coble bottom up.

so that when the boat grounds stern first on a flat beach, she remains upright instead of falling more or less over on her side, as all boats with a stern post and dead wood must do when grounded in that manner; and in fact the whole shape and construction of the coble is with a view to beaching them stern first on a flat shore without shelter, and this build would not be suitable for the general work in which open boats are employed, and where they have either a harbour to go into, or a ship to hoist them up when bad weather comes on.

WHALE BOAT.



There is a great deal to be said in favor of a properly built whale boat. I do not mean the heavy and misshapen abortions that are called whale boats in the Royal Navy, with a lump in the middle and two sharp ends, and heavy dead wood both forward and aft, which will neither pull, sail, land on a beach, or go through a surf, and are bad sea boats. A properly built whale boat is a splendid sea boat, admirably adapted for going through a surf, or landing on a beach, (and in these cases should be steered with an oar) pulls well, particularly against a head sea, on account of her buoyancy; and sails fast off the wind; and the only thing that she does not do as well as other boats, is to beat to windward: as from lack of dead wood, and a certain fulness of lines, she has not much hold in the water, and is consequently leewardly under sail, It is impossible to combine all qualities in one boat, but a *bona fide* whale boat possesses so many good qualities for "all round" sea work, that it is a pity there are none of them in the Royal Navy.

A whale boat should have a long floor, not quite flat but with a slight rise in it: an easy turn

to the bilge, and a certain amount of "flam" to both bow and stern; she should have a bold sheer, a raking stem and stern post with a good deal of round in them, and very little dead wood either forward or aft.

A whale boat is intended to be steered with an oar, but as this is not always a convenient mode of steering, a rudder can be used, and should be fixed on to the rounded stern post, which can be done without difficulty; and on no account should the sternpost be straightened for the purpose of making a straight rudder post; when this is done there must be a large dead wood, which immediately deprives the whale boat of one of her finest qualities, namely her great turning power; and renders her unsafe either for going through a surf, or landing on a beach.

It has been observed that a properly built whale boat is admirably adapted for going through a surf; so that it may not be out of place to say a few words upon this subject, under the head of whale boats.

First let us consider the question of going *in* through a surf; this is the most dangerous, as in the first place a surf never looks so bad from outside as it does from inside, and moreover there can be no dodging, or waiting for a lull in

the breakers; once you are in them you must go on, whether you like the look of it or whether you don't. The great object is to keep the boat "end on:" as long as this can be done there is safety, (for I do not propose to contemplate the eventuality of being turned "end over end," this can only happen when the breakers are very heavy and steep, and the boat short, and I don't know of any cure for it except good luck.) The extreme difficulty of keeping a boat "end on" when going through a surf, arises from the fact that, as the crest of each advancing wave reaches the stern (assuming that she is rowing in bows first) the bow of the boat is in the hollow of the wave, and consequently in water that is (practically speaking) not in motion; whereas the particles of water on the crest of an advancing breaker, are in extremely rapid motion, and water being a heavy substance, this breaking crest acquires a great momentum, and it is evident that if it catches the stern of the boat *the least bit sideways*, the tendency will be to turn the boat broadside on; this tendency will be in proportion to the momentum of the advancing wave crest, and to the resisting power of the boat: it will also be evident that the rudder will at this moment not only be useless, but worse than useless, as it will give additional surface for the wave crest to get hold of: all deadwood will for the same reason be detrimental; that forward, as it will hold the boat's bow, and form the pivot on which she will turn; and that

aft as forming the fulcrum upon which the advancing wave-crest will act: hence a whale boat with a good bold sheer and very little dead-wood, and steered with an oar is so well adapted for going through a surf: this form and mode of steering presents the maximum of advantages for the boat's crew to turn the boat, or to keep her turned in the direction *they* wish to have her, and a minimum of advantages for the sea to turn her in the way *it* wants to turn her: one powerful stroke of the steer oar will slew the boat two or three points, and thus get her straight again if she has been partially turned by an advancing breaker: if necessary, in going in through a surf, the two after men of the crew (supposing it to be a four or six oared boat) can stand up and assist the steer oar by using their oars fore and aft against the quarter of the boat, so as to check her from turning in whichever direction she shows a tendency to do so. A "drogue" may also be used to assist in keeping the boat "end on," and to check her weigh, and allow the crest of the breaker to pass by her without carrying her helplessly forward with such terrific velocity as to render all the efforts of the crew to keep her "end on" unavailing. It is hardly necessary to add that much will depend upon the skill and coolness of the boat's crew, and upon their knowing exactly the right thing to do at the right moment, for there is very little time for giving orders. Under some circumstances, more especially if the surf is very

heavy, but does not extend for any great distance, it may be advisable to take the boat in stern first; in this case she would of course be turned round before she came to the breakers, and backed in, and when in this position she will have the advantage of being able to pull ahead a few strokes upon the approach of any particularly ugly looking curler, and by meeting it "bows on" with weigh on the boat, she will have a better chance of riding over it in safety. Going in through a surf is always an exciting, and occasionally a dangerous, operation.

Coming out through a surf is a less dangerous proceeding. In the first place you can see the worst of it; a surf from inside looks as bad as it is, so that you can generally form a correct estimate of the danger to be encountered. Secondly in pulling out through a surf you can watch your opportunity, and choose a comparatively calm moment for rowing through the worst belt of breakers; all waves, either on bars, beaches, or in the deep sea, are more or less intermittent; and although it may be doubted whether the popular theory of every ninth wave being heavier than the others is a correct one, it is not open to doubt that after two or three exceptionally heavy waves or breakers, comes a lull; and that these intermissions are frequent, if not regular: this fact is well known by all men who are accustomed to cross dangerous bars, or to launch boats from exposed beaches, and is of course

taken advantage of accordingly. Thirdly in rowing out through a surf you have the advantage of being able to put back if you find that the outside breakers (which are almost always the heaviest) are worse than you anticipated, or if your crew are exhausted or unequal to the task, or your boat has shipped so much water as to render it dangerous to proceed: under any of these circumstances, you have the option if you think fit, of backing your boat in again before you come to the worst part; or even if an opportunity offers of turning her round, and rowing back bows first: therefore going out is not so dangerous as coming in.

A drogue cannot be used for going out, it would be worse than useless, as its effects is to check the boat's weigh; and in going out, the chief object is to give the boat as much weigh as possible, to force her against both wind and sea, to ensure her being under command, and with sufficient momentum to take her in safety over the crest of each wave, bows on to it; and as each breaker will check her weigh, and a heavy one stop it altogether, the boat's crew must "give way" hard between the breakers, so as to keep their boat under command, and bows on: and for this reason it is absolutely necessary to have good *power* in the boat, especially if it is blowing hard; a strong and experienced boat's crew who will lift their oars well out of the water, and not catch crabs. A

breaking sea is very apt to knock the oars out of the rowlocks or crutches, or even out of the men's hands; and if this should happen on one side of a boat, and the men not be able or handy enough to get them back again and "give way" before the next heavy breaker arrives, a capsize would be the probable result. A strong and able boat's crew is therefore necessary for going out against a surf when blowing hard; but still on the whole and for the reasons above stated it is not generally such a dangerous operation as going in. In my opinion sailing in over a bar is always a more risky business than going in under oars: there may be some exceptions to this rule in some parts of the world, and with some boats, but I am not acquainted with any.

I fully expect to be contridicted in the above assertion; and I shall feel very much obliged to anyone who knows better, if they will kindly tell me about it, giving a short description of the boat, place, and circumstances; in order that I may embody it in my next edition. For the sake of humanity, all knowledge and experience upon this subject should be as widely diffused as possible; and no man however experienced he may think himself, should ever be too proud to learn, even from an outsider, who may have certain local and technical knowledge to impart which he of the wider and more general information may never have been in the way of learning; and it is generally the case that those

who know most about any subject, are the most modest of their own opinions, and the most willing to learn. With this slight digression which I commend to the serious consideration of all who read it, I shall conclude this chapter.

CHAPTER V.

YACHTS.

It would be entirely outside the scope of this little book to enter at any length into the subject of yachts and yachting, a subject which I suppose embraces a great variety of vessels, ranging from the modern circumnavigating steam yacht of six or seven hundred tons, down to the cock punt at Brighton with 'Arry and is gal out for a shilling's worth of real pleasure. All round the coasts of England, Ireland, and Scotland during the summer months, may be seen yachts of all sorts, sizes and rigs; racing, fishing, making passages, or "fooling around" as the case may be; some of their owners being really good amateur sailors, knowing all about it, and sailing their own vessels creditably; others again being entirely in the hands of their skippers, and knowing no more about it then their grandmothers' cat knew about astronomy: but all showing more or less the aquatic taste of the British race, and its desire to dabble in salt water, and to help to rule the waves.

Yachts may be broadly divided into two classes, cruizers and racers, and although some

of the larger ones endeavour to combine both qualities in one vessel, it is not generally attended with much success.

The principal racing classes are the five, ten, twenty, and forty tonners; all these are cutter rigged, and race in their own classes: but the larger yachts of whatever rig they may be, usually all race together and allow each other time for tonnage and time for rig; thus cutters and yawls both allow schooners time, and cutters also allow yawls time: in order to make these mixed races at all fair it is usually arranged that schooners shall sail at $\frac{3}{5}$ of their tonnage, and yawls at $\frac{4}{5}$ of their tonnage. The necessity for handicapping the cutters, arises from the fact that they go to windward so much better than the schooners, and better than the yawls, and proves what I observed in a previous chapter (viz.) that the arrangement of having the principle part of the canvas disposed in one large sail, ensures going to windward better then dividing it into several smaller sails; and it is found in practice that a small gain in working to windward is worth a large gain in running before the wind, or "reaching:" therefore in all ordinary races where there is usually a considerable amount of beating to windward, the cutters have the best of it; but in some of the ocean races where there is often a leading wind for the whole or a greater part of the course, then

the schooners and yawls often have it their own way, and win on their merits.

With regard to the size of yachts which can be conveniently rigged as cutters, I think that it is now pretty generally acknowledged that about 100 tons is the limit, even for racers, and that above that size the mainsail becomes too large and unwieldy a sail to be handled conveniently, and the yawl, and schooner rigs then take its place for all the larger yachts.

I suppose that the greatest revolution in yachting which has ever taken place in this country, was caused by the appearance in the Solent of the famous "America" in 1851. She was a schooner of about 170 tons, and she was built and her sails were set upon a novel principle; she had a good deal of beam carried well aft, a shallow body, but a deep keel aft, and a large after deadwood; a long sharp bow with a very light draught of water forward, and a clean hollow run: the deck view of her was something like an elongated pear in shape with the small end forward: in consequence of her light draught of water forward she carried no jib, only a staysail, foresail, and mainsail, all of which were laced to booms, and in light winds she carried a jib-headed main gaff-topsail; she had no fore-topmast. All her sails set as flat as boards, and she "looked" and "fetched" about a point nearer to the wind than any of our

English yachts of that day, notwithstanding that she was a schooner, and the consequence was that she beat them all into a cocked hat, and thus caused a great revolution in the art of yacht-building. At first she was copied slavishly with more or less success, but very soon she was improved upon; the long sharp bow and the flat sails were adhered to, but the shallow body was given up, and deep bodies and lead ballast soon came into vogue. The "America" herself was sold to English owners for a large sum of money, and never did much good afterwards; she was badly put together, of unseasoned timber, and soon got rotton, so the Yankees weathered us all round. Our yacht builders then woke up, and almost every year since then has seen something new in the field, generally, but not always, an improvement. Occasionally some famous old craft like the "Arrow" has kept the supremacy, or at any rate made a gallant fight against all comers for many years, but eventually has had to succumb to a deeper body and more lead ballast, until it almost seems as if there was no limit to the deepening of the body, and the piling on of lead both outside and inside, and the proportionate increase in the size of the spars and sails which this lead enables them to carry.

The present English rules for measuring yachts for tonnage have certainly not tended to improve their build according to the general acceptation of the term; or to make anything of them but

racing machines; but then on the other hand, the word "machine," which is used as a term of contempt, might with equal justice be applied to cruizing machines, or fishing machines, or loafing and idling machines; and if people want to race they will naturally select a racing machine, and not one of the others to do it in: and the idea of having a comfortable cruizing yacht which can be entered occasionally for a race, and stand a chance of winning, has become pretty nearly exploded, and is about as reasonable as entering a comfortable park hack for a first-class flat race.

As long as the present rules for measurement continue in force in the principal clubs, so long shall we have the present form of yacht built for racing purposes, as giving the largest vessel, and the greatest sail-carrying power which can be obtained within certain prescribed limits of length and breadth; depth and displacement not being taken into account; but if some plan could be arranged, and made general, by which actual displacement or area of sails were made the guage of size, there would then be every inducement for yacht builders to produce the most symetrical and perfect models which science and experience combined could suggest, instead of the mere lead-and-sail balance, like an up-ended card case, which now appears to be the best form for building a racing yacht, in order to comply with the present tonnage rules: and we should not then have the anomaly of a "five tonner"

carrying seven tons of lead ballast besides other weights.

A great and broad distinction still seems to govern the fundamental principles upon which the English and American yachts are built. The Americans obtain the stability of their vessels by great beam. They carry but little ballast, and are broad and flat with a shallow body, and skim *over* the water; they have a fine entry, and a clean hollow run, an upright sternpost, and a great deal of after deadwood, and either a deep keel or a centre board to make them go to windward. The English ignore beam, and obtain their stability by a very deep body with a lot of lead in the bottom of it, or attached to the keel outside; they plough *through* the water, and the old salts sneer at them and call them "lead mines," but they answer the purpose for which they are built.

The American yachts are admirably adapted to the great stretches of inland water which exist in the United States, where the depth is comparatively shallow and the sea comparatively smooth; but it has been conclusively proved that this type of vessel cannot go to windward against our English "lead mines" in rough water; weight and depth then come into play, and the shallow body has no chance.

The difference in the types of the English and American yachts is also due in a great measure

to the difference in the rules for tonnage measurement; these rules are totally different: and each of course tries to build the largest vessel possible within the limits of the prescribed dimensions for certain tonnages, thus it is extremely difficult to bring an English and an American yacht together on terms which would be considered equal by both parties; for each will have a different view of what constitutes "size," so that a long, deep, narrow, English yacht which we might measure as a 40 tonner would in all probability be classed in the United States as a 60 tonner: and a broad, shallow, American 40 tonner would very likely measure 80 tons by the English measurement; hence it is almost impossible to class them in such a manner that would satisfy both parties. The American rules for measurement are more conducive to the production of good and beautiful models than the English.

CHAPTER VI.

BERMUDA BOATS.

The intricate waters of the Bermuda Islands are navigated by a style of boat (commonly called 'Mudians) the look of which is no doubt familiar to many people who have never been to Bermuda.

They are short, broad, deep, handy little vessels; they are not fast, though they get to windward in a wonderful manner, and are admirably suited to the waters they have to sail in, where there is generally a smooth sea and a fresh breeze; they are very hard to beat in their own waters, but they don't seem to stand transplanting, and I never heard of them doing much good in England or indeed anywhere out of Bermuda: there is a spurious imitation of them at Malta, which I think a true Bermudian would repudiate.

An officer of the Royal Engineers who was stationed for some years at Bermuda, and who belonging to a yachting family, and accustomed to boats from his childhood, naturally became a successful owner, and sailer of his own vessel; has kindly furnished me with the following description of Bermuda boats, and Bermuda racing.

"The Bermuda boat is peculiar both in build "and rig; and these peculiarities are the out- "come of the natural surroundings.

"As regards build, the 'Mudian boat is short, "broad, and fairly deep. One of the most "successful yachts is 16 feet long on the keel, "8 feet beam, and 4 feet deep (from the water "line to the bottom edge of garbord streak). "Most of the boats have a good piece of false "keel, which increases their draught of water, "and saves the main keel when they go on "shore on the reefs. The above proportions of "length, breadth, and depth, which have the "merit of simplicity, are more or less common "to all 'Mudian boats of this size (under 5 tons). "The rig is simplicity itself; the mast which "in all the small boats (of 6 tons and under) "has no shrouds, is stepped in the bows, and "rakes aft, so that the truck is about amidships; "the sail is leg-o'-mutton in shape and has only "one halyard; the boom is necessarily of great "length and is fitted with double main sheets, as "one of the "fads" of the pilots is to sail close "hauled on the weather sheet, keeping the lee "one slack. The sail is in many cases laced to "the boom. The jib is a large sail and it is set "on a strong bowsprit, which like the mast has "no shrouds. The standing rigging consists of "the bobstay and forestay, with a light wire "stay corresponding to a topmast stay, to support "the head of the mast. The mainsail sets very

"flat as there is no gaff sagging away to lee-
"ward, so that these boats necessarily hold a very
"good wind, and owing to their build are
"extremely handy and quick in stays; but
"owing to their shape they are bad sea boats
"compared to our long narrow vessels; and
"from these characteristics may be inferred the
"nature of the waters they are intended to sail
"in. The islands are enclosed on three sides—
"North, East, and West, by coral reefs, extending
"on the North and West sides 6 to 8 miles
"from the shore; these reefs lie in great patches
"in all directions, and are intersected by most
"intricate passages of deep water. There are
"several large pieces of clear water, but by far
"the greater portion of the area inside the outer
"reef, is full of reefs and shoals from 2 to 6
"feet below the surface. To navigate these
"waters the boats must be handy, quick in
"stays, and weatherly; they need not be good
"sea boats as the water is necessarily pretty
"smooth."

"The black pilots, thanks to long practice
"good sight, and the beautiful clearness of the
"water, will take a boat anywhere, as they can
"see passages through the reefs a long way
"ahead, and can tell to a foot or two the depth
"on a discoloured patch some 50 yards away.
"There is a good deal of excitement in steering
"a boat in a stiff breeze through a bad bit of
"such water, as one moment she is shivering

"along as high as she will look, the next "broad off the wind, and so on until the "danger is safely past, or a good bump on a "piece of brain stone coral takes away perhaps "half the false keel."

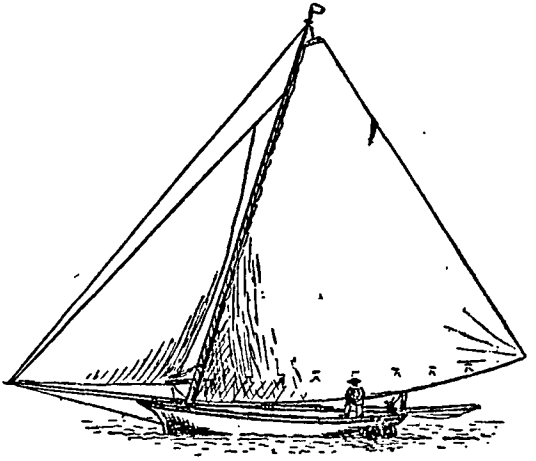
"The simplicity of the rig is of great im- "portance in another way, it enables one man, "or even a boy to handle any boat up to 10 "tons, and to run is craft alongside a wharf "or jetty as if she were a dingy, It is a nice "operation for one man to bring a large boat "safely alongside a wharf in a strong breeze, "and it is only the simplicity of the rig that "renders it possible."

RACING.

"The Bermudians are extremely fond of "boat racing, from yachts down to dingies."

"The Royal Bermuda Yacht Club gets up "amateur' matches, in which the yachts are "manned and steered by amateurs, and the "yachts sail in their ordinary train: but on the "day of the regular regatta the yachts appear "in racing spars and canvas, and are generally "manned to a great extent by the native boat- "men, although in the race for the Duke of "Edinburgh's cup the yachts must be steered by "members of the club."

"A drawing (from a photograph) of the "Unknown," 10 tons, in her racing gear, shows "the rig."



"Unknown," 10 tons, in her racing gear.

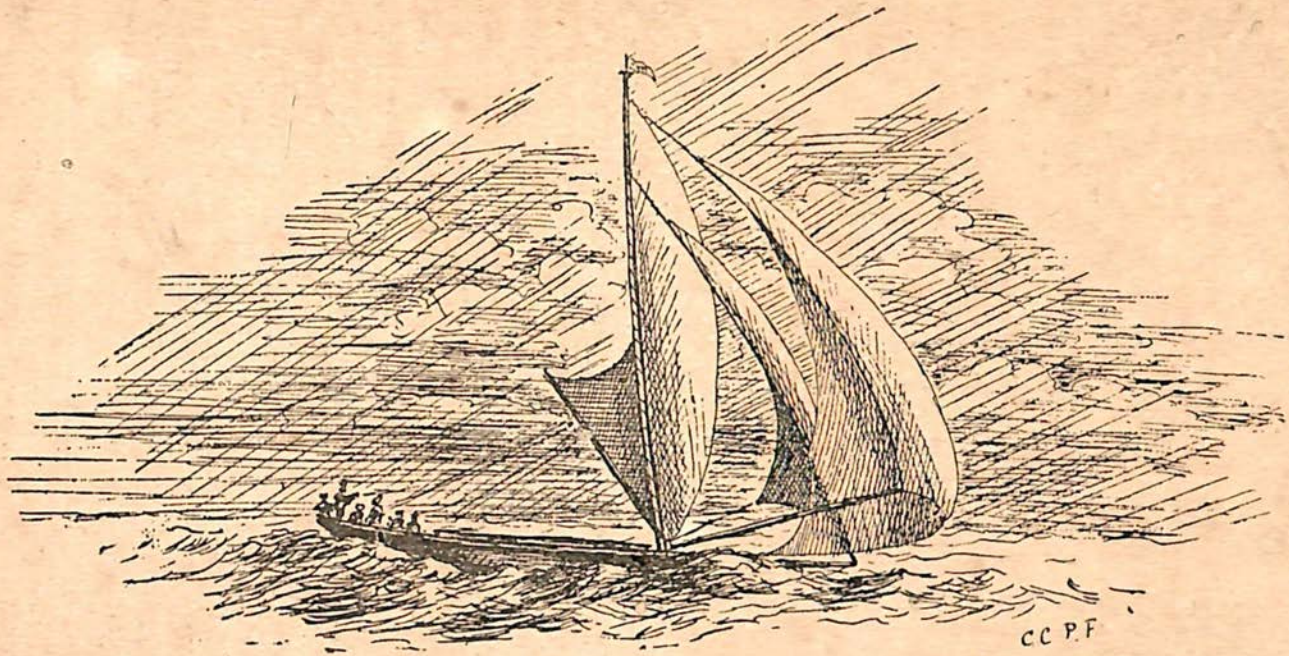
"The mainsail is laced to the mast and made "fast aloft. The boom, which is secured to the "clew of the sail, projects about two feet six "inches forward of the mast, and by means of "a small tackle made fast to the foremost end "of it, and to a strop round the mast four feet "from the deck, the boom is roused taut aft, and "the sail made to set as flat as a board: small "stops keep the sail to the boom, and the deep

"rounded foot of the sail, which comes below the "boom, is fitted with lanyards which the crew "hold in their hands when going to windward, "and make that part of the sail set flat also.

"The Bermudian race course is always the "same, and is so arranged as to give as much "beating to windward as possible. In the great "sound one mark boat is anchored three miles "dead to windward of another (and this is "always just possible, no matter how the wind "is). The boats start from the lee mark boat, "the time allowance for size being given at the "start, and beat round the windward boat, then "run dead before the wind to the lee boat, round "her and back again, winning the second time "at the weather mark boat, all marks being left "on the port hand." Such an arrangement for a race is of course only possible at a place where the wind is likely to remain steady for some time, which. as a rule, it does at Bermuda, for the day at least. "Shifting ballast is allowed, "and this enables the owners to fit their boats "with enormous spars and sails, which are only "used perhaps for this one day in the whole, "year, unless some private match should be the "outcome of the day's sport."

"During the run to leaward the boats set a "large spinaker, but owing to the position of the "mast and the shape of the boats, they bury "themselves terribly in running, and have been "known to sail right under water and go to the

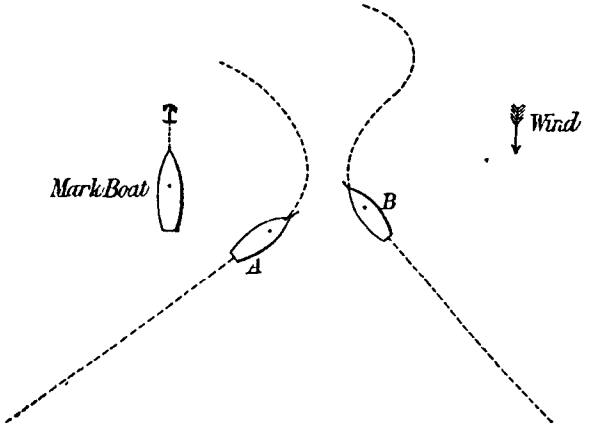
"bottom, when racing before a strong breeze. To "counteract this tendency all the crew sit as far "aft as possible, and ballast is also shifted right "aft during the run: the crew keep the spinaker "running rigging in their hands, and frequently "let the whole concern go overboard just before "reaching the lee mark boat. The boats stagger "along when running before a good breeze, and "roll until the booms touch the water: this roll-"ing is checked by suddenly hauling in the main "sheet a bit, and spilling some of the wind out "of the sail.



Bermuda boat running.

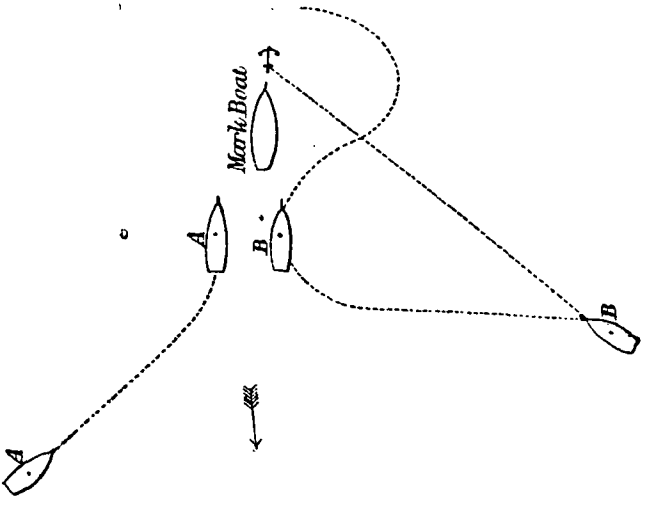
"When sailing to windward neither jib nor "mainsheet is belayed: the jib sheet is eased up "to each puff, so that the boat shoots up to "windward easier, and at the same time gets "relief from the weight of the wind in the jib: "and the mainsheet is eased a little in tacking "as soon as the boat is nearly round on the other "tack, and hauled in as soon as she is fairly "under weigh again.

"If two boats meet on opposite tacks so that "there is a risk of collision, *both* boats are obliged "to go round, and this rule taken in connection "with the one which enacts that all marks are "to be left on the port hand, causes some very "pretty manœuvring at the finish of a race.



"'A' and 'B' meet on opposite tacks close "to the starboard quarter of the mark boat (to "weather which is to win). 'B' is slightly "ahead of 'A' and would weather the mark "boat and win, but 'A' hails him to go about, "and both tillers go down together, 'A' fore-"reaches round the mark boat and wins in stays.

"Now, if 'B' could have foreseen this a few "minutes before, and had kept away a little, "so as to catch 'A' just astern of the mark "boat, 'B' would win, as 'A' must either go "about or bear away under his stern.



"Of course "B"s tactics would be danger-
"ous, as a favouring puff might enable "A"
"to weather him altogether, in which case "A"
"would certainly win; and on the other hand
"a puff favourable to "B" might have enabled
"him to pass clear to windward of "A" if he
"had kept close hauled; so that it becomes a
"matter of very nice judgment, diluted with
"a fair amount of chance.

"To steer a boat to the best advantage at
"the finish of a Bermuda race when there are
"several vessels close together, demands a good
"deal of knowledge of pace, and of the capa-
"bilities of the boat, and is only to be
"accomplished by plenty of practice.

"The following instance will show what close
"affairs the finishes of these races sometimes
"are. In a race for a cup given by the
"Princess Louise a short time ago, three boats
"of 4½, 5½ and 7 tons respectively, made a
"dead heat of it, the prize being eventually
"given to the smallest boat. Such a finish does
"not often occur; but it not uncommonly
"happens that it is a question of which boat
"gets the favouring puff."

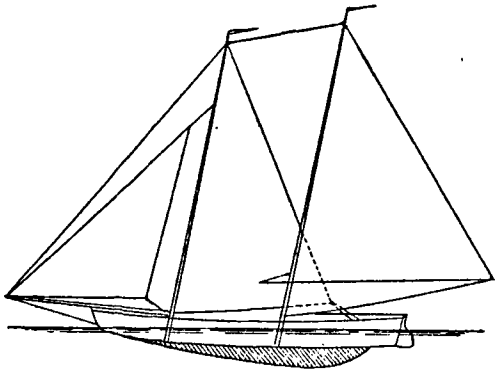
"Such finishes to yacht races are far more
"interesting to the spectators, and to the crews
"of the yachts also, than the finish of a race
"at home, where, in consequence of the time

"allowance being given at the finish of the "race, scarcely anybody knows who has won "it.

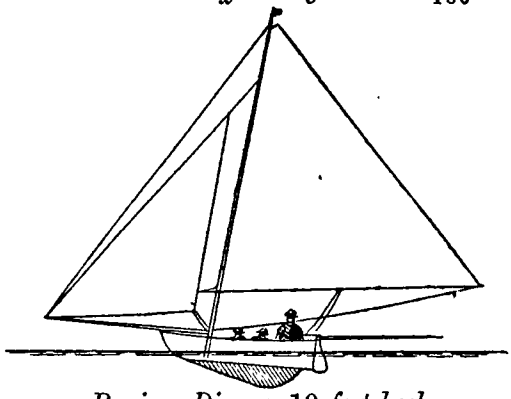
"The skiff and dingy races are of more "frequent occurrence than the yacht races: the "boats are splendidly sailed, and are crowded "with canvas, if it blows the crew sit right up "to windward, leaning over the weather gunwale, "holding pigs of lead in one hand while they "hold on to lanyards and beckets with the other "hand and their feet; if the wind drops some of "the ballast is hove out into shoal water; and "sometimes one of the crew jumps overboard to "lighten the vessel.

"The skiffs and dingies are like the yachts, "carvel built, and are constructed of the almost "indistructable pencil cedar which grows in "abundance on the islands: one of the best "yachts is over 50 years old, and is still quite "sound.

"The skiffs are long narrow boats, pull and "sail well, and are good sea boats of their class: "their rig is a very pretty one.



Bermuda "Skiff" Rig. Scale $\frac{1}{180}$.



Racing Dingy, 10 *feet keel.*

Mast	-	27 feet
Boom	-	21 „
Bowsprit	-	12 „
Spinaker Boom		21 „

Scale $\frac{1}{180}$.

(Dimensions taken from Surg.-Genl. Ogilvy's pamphlet on Bermuda).

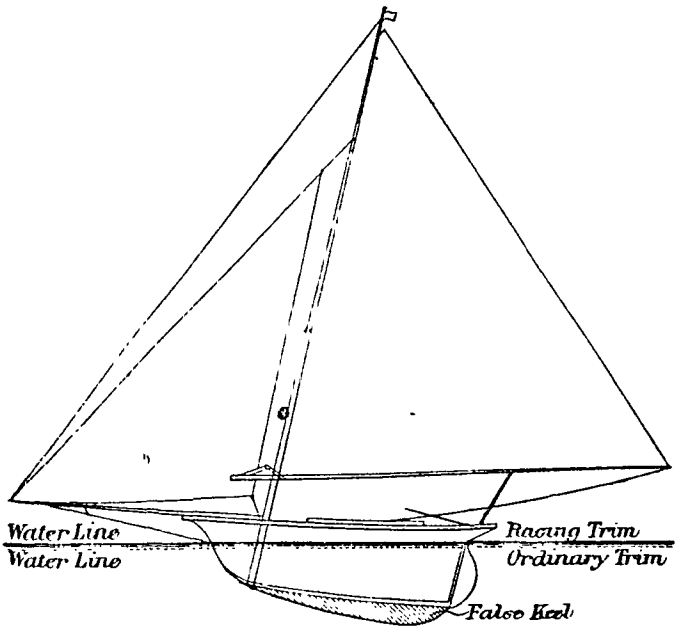
"It is a very fine sight to see eight or ten of "the skiffs, and 15 to 20 dingies of all sizes, "racing in St. Georges' or Hamilton Harbour. "The finishes are generally extremely exciting "on account of the rule which gives the time "allowance to the smaller boats at the start: and "if well handicapped the boats are all close "together at the finish.

"The Bermuda boat is not suited to open "water, where there would at times be a heavy "sea, but she is admirably adapted to the enclosed "waters amongst the islands, and inside the coral "reefs, which afford shelter from the sea but not "from the wind: she is extremely handy and can "go about in her own length; and again, in con-"sequence of her great weight and depth she "can be made to take a very long fore-reach in "stays: and one frequently sees a boat coming "along with good weigh on and well full, and "then putting her helm down shoot through one "of the numerous narrow "cuts" or passages "head to wind, trusting entirely to her momentum "to carry her through.

"There are few places where boat sailing and "racing are so inexpensive, and so exciting, or "where it is carried on by all classes with so "much energy and enthusiasm as at Bermuda."

It will be gathered from the foregoing description, that the Bermuda form of boat and rig,

though extremely handy and well adapted for beating to windward in smooth water, is so bad on other points of sailing and produces such an indifferent sea boat, that it is never likely to be generally adopted anywhere out of Bermuda, where the surroundings and the consequent requirements of a sailing boat are so extremely peculiar; and where no doubt the natives, from long experience and from doing most of their business by water, have arrived at what suits them best; but what will not stand transplanting.



Bermuda Yacht in Racing Gear.

(Dimensions taken from pamphlet on Bermuda by Surg.-Genl. Ogilvy.)

16 feet Keel
8 „ Beam } Tonnage, $4\frac{3}{4}$ tons.
4 „ Depth

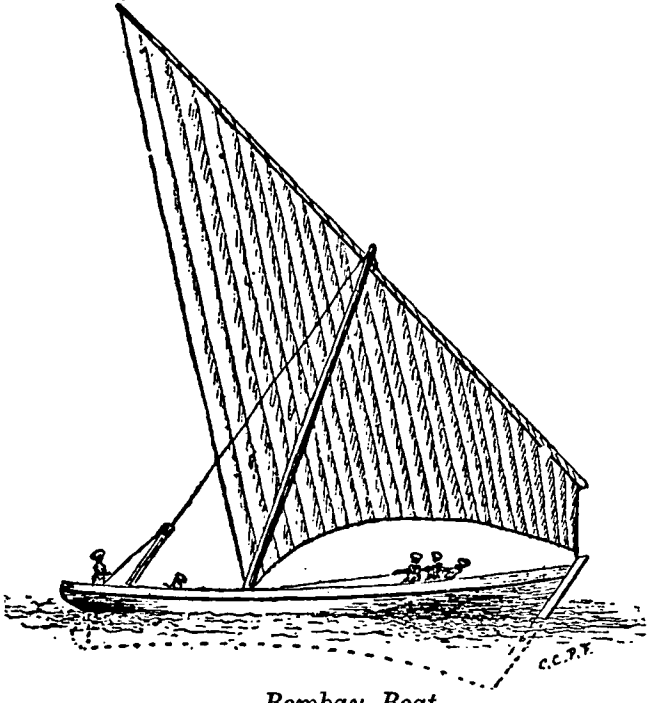
Mast	-	44 feet
Boom	-	$33\frac{1}{2}$ „
Bowsprit	-	19 „
Spinaker Boom		25 „

Scale, $\frac{1}{180}$.

CHAPTER VII.

BOMBAY BOATS.

The Bombay boats are of a very peculiar build and rig.



Bombay Boat.

The mast, which steps somewhat abaft the centre of the boat, rakes forward a great deal; it is very stout as it is unsupported by anything except the halyards, which lead aft, as shown in the sketch; the yard also is a very heavy spar in the larger boats, being always considerably longer than the boat herself: there is no "traveller" or "parrel," and the yard hoists right up to the sheave hole in the mast-head.

The deck view of these boats is very like that of the famous "America" schooner, long sharp bow, beam carried well aft, round stern, and altogether like an elongated pear with the small end forward: but the greatest peculiarity consists in their under water profile, as shewn in the sketch by the doted lines; it is exactly the reverse of the usual plan, which is to have the greatest draught of water aft, and the leek convex or "Camber" as it is called, whereas these boats have their greatest draught of water forward at a peculiar looking sharp point where the long, straight, raking stem joins on to the arched keel, which it will be seen is concave instead of convex. Now the reason of all this is as follows: These boats cannot tack, they never attempt it, it would be impossible to swing that great yard and sail round before the mast with the boat head to wind, and the sail would be useless if it laid aback or to windward of the mast as some latteens do, for at least half the sail would be flat aback; so that they always

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"wear" instead of tacking, and they do so with great facility. That peculiar looking fore-foot is all deadwood, it makes the boat weatherly, and it seems to act as a pivot upon which the boat turns when the helm is put up for wearing.

It should be remembered that it is the stern of a vessel more than the bow which moves when the helm is put over; this is the case in all vessels, but in these Bombay boats and vessels of similiar construction, this movement of the stern is still more accentuated, so to speak, in consequence of the peculiar shape of their under-water profile; and when the helm is put up, the stern of the boat appears to fly up in the wind, and the bow to remain stationary, and she wears round in a wonderfully small space, and very quickly; the foremost yard-arm is brought in to the mast, and the wind helps the sail round "before all," the sheet is carried round before the mast and brought aft on the other side, and the foremost yard-arm taken forward again, and the tack secured, and the whole operation appears to be preformed with very little trouble. It will be observed that the yard is slung very nearly in the middle, and their is as much sail before the mast as abaft it, so that it is a perfectly balanced sail, and the sheet almost comes aft of itself; in consequence of this, only single sheets are used even in the large boats, and these are spliced

into the clew of the sail, so that their is always something to hold on to when the boat is wearing round before the wind; but if the sheets were tackles, and unhooked each time the boat wore round, the crew would be very apt to lose hold of the clew altogether when wearing in a strong breeze; in fact it would not be practical at all.

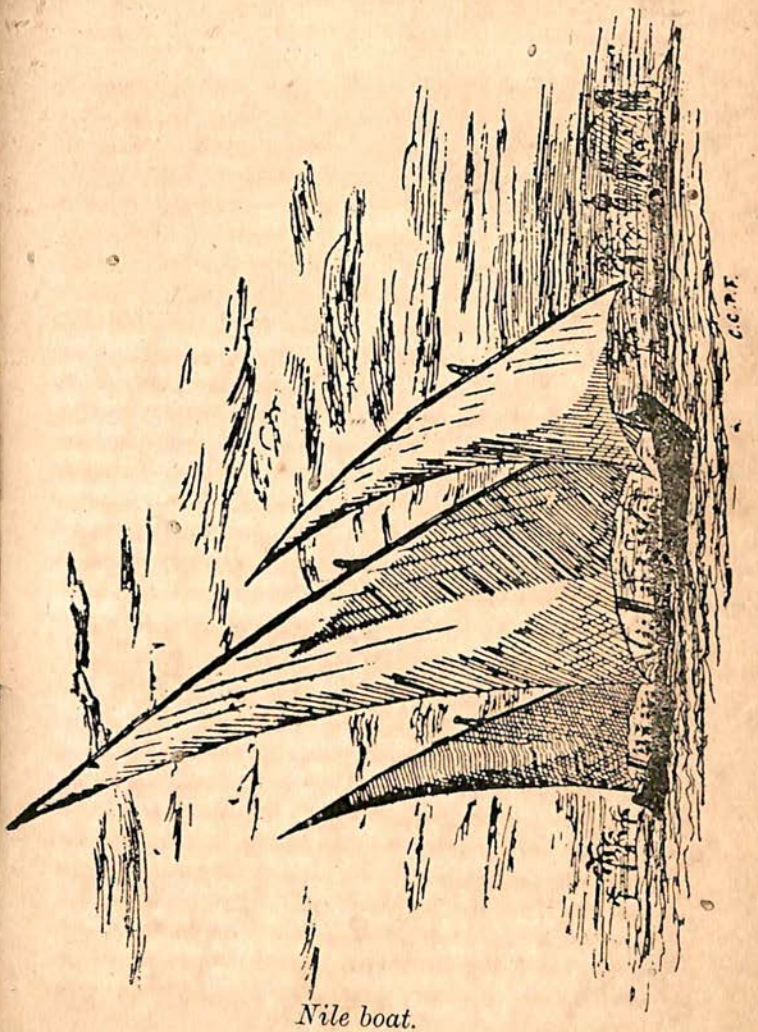
It will be observed that these sails are a modified form of dipping lug, with a very long yard, and a very short luff.

This rig can only be worked in a place where there is plenty of sea room, and no narrow channels or intricate navigation of any sort, as in most harbours it would of course be utterly impossible to "wear" every time instead of "tacking."

The Bombay people make their sails in a curious manner. The plan of the sail is laid out on the ground, and the roping which is stout and goes all round the sail, is then laid down and pegged to the ground; small cords are spliced into the head rope at intervals a little less than the width of the stuff of which the sail is to be made, and these are pulled straight and hitched lightly to the foot rope; the stuff is then laid on in cloths, which are sewn together, with the cords *inside* the seams, and then the cords are pulled taut down and

secured permanently to the foot rope: this produces a very hollow foot to the sail but it also produces a sail that may be said in one sense to be flat, insomuch as it has no large belly in it, though the whole sail is more or less corrugated from head to foot: it also admits of the very flimsiest material being used for sailmaking, as there is no strain on the stuff itself: a complete skeleton having been made as above described, and the stuff then laid on and sewn to it more or less loosely, it is obvious that the skeleton will bear almost entirely the various strains to which a sail is subject, and that the sailcloth itself will only have to support the local strain due to the pressure of the wind on each individual cloth: the sail is also very easily repaired, and a rent does not extend beyond the cloth where it occurs.

This rig, and various modifications of it are to be found in the Mediterranean, Red Sea, East Coast of Africa, Persian Gulf, Gulf of Arabia, and in all countries where there are Arabs; it appears to be a Mahomedar rig. It is suited to light winds, difficult to reef, and unmanageable in bad weather; it would be dangerous and quite impracticable in the stormy seas of the British Isles. The Nile boats are a modification of this rig, and carry more sail for their size perhaps than any other vessels in the world; the accompanying sketch is in no way exaggerated, the main yard in these boats being at least twice the length of the vessel.



Nile boat.

CHAPTER VIII.

CHINA.

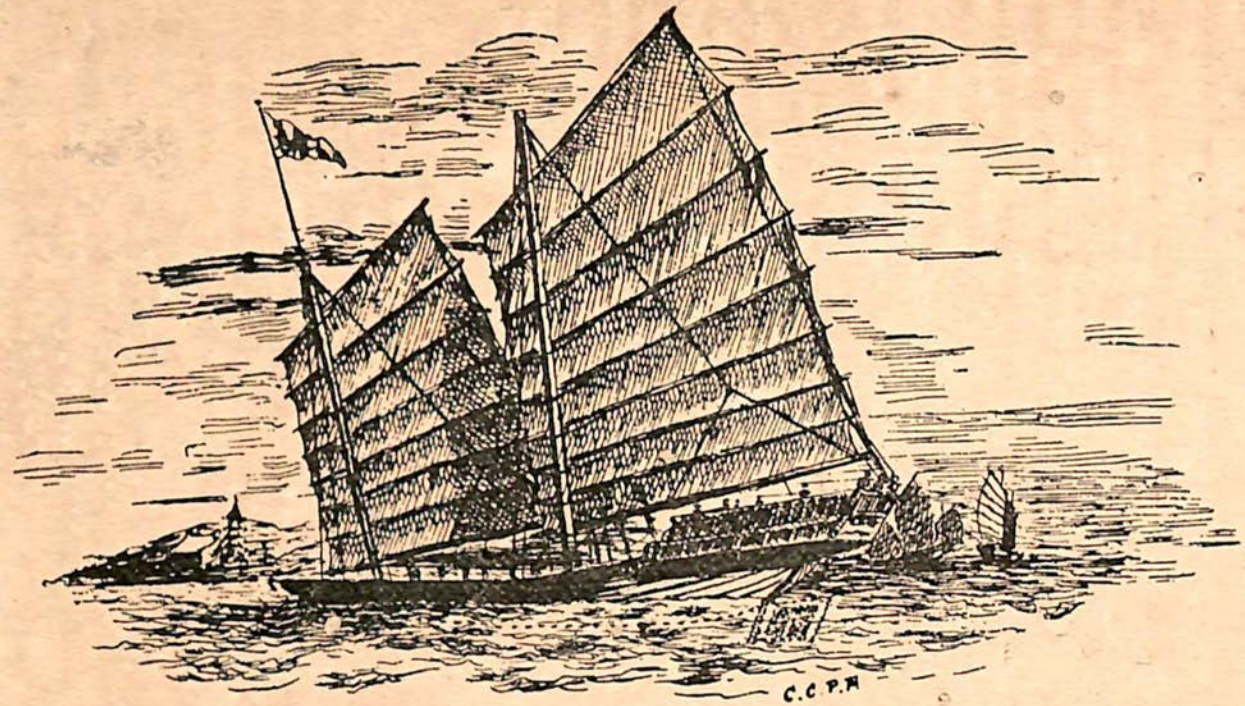
Let us now move on to the Eastward, and see how they rig and manage their boats in the Celestial empire; for there is something to be learnt even from the Chinese, although we are in the habit of looking with scorn upon their curious rig, and mat sails, and their clumsily built junks, admirably adapted though they are, to the marvellous system of inland navigation with its shallow rivers and lagoons; and the labyrinths of the numerous archipelagos which cluster round the coasts of China.

The larger sea going Chinese junks are neither fast nor beautiful, at least not to the eye of a sailor, though they may be so to an artist; but they carry a great deal, are fairly handy, draw very little water, and are said to be good sea boats; and no doubt answer their purpose well, as Chinamen are not generally in a hurry: but the smaller vessels of about 50 and 100 tons, which navigate the inland waters and the archipelagos, are, I have no hesitation in saying, *the handiest vessels in the world.*

They are very shallow yet they work to windward well; they run very fast, and they can tack or wear almost in their own length; the sails require very little working, they are always as flat as a board, and they are reefed with the greatest facility by simply lowering the halyards; and as each batten has a separate parrel to it, they all lie down quite snug one on top of the other as the sail is lowered.

There are a great variety of boats in different parts of China, and the northern and southern boats differ considerably from one another, but the same leading features of build and rig are more or less common to all, and as the southern are the best boats, and the most typical, I will give a sketch of one of about 50 tons, though they vary greatly in size without varying much in rig.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY



South China.

It is impossible in a small sketch of this size to show the peculiar arrangement of cords, which serve the purpose of a sheet, and which pull equally upon all parts of the leech of the sail, and keep the whole sail at the same angle with the keel. The sails are usually made of a very coarse sort of grass matting, and the battens which run along them at intervals, are bamboo, and are thus light and strong, they keep the sail perfectly flat upon all points of sailing; so that it would appear that the Chinese have known for many centuries the secret which our yachtsmen only found out a few years ago.

One of the most remarkable features in these boats is the enormous rudder with gratings in it, this rudder acts as a lee board as well as a rudder, and in sailing "on a wind" it prevents the boat from making so much lee way as she would otherwise do; it also enables her to turn with marvellous quickness, and the total absence of deadwood and stern post also assists in this turning power, as it allows the stern of the boat to fly round in whichever direction the rudder is pointed. The rudder projects considerably below the bottom of the boat, and is fitted to trice up into a slot or rudder-well in the stern, so that it shall not bear the weight of the vessel when she takes the ground; this increased depth of the rudder gives of course increased turning power, but it is a plan which is not entirely peculiar to the Chinese, for the Venetian fishing

boats, and one or two other classes of vessels in the Mediterranean are fitted with rudders which project below the bottom of the boat, and can be triced up at will: it gives great handiness, and fair weatherliness upon a very light draught of water.

The Chinese boats have great beam, and great height out of the water at the stern, but they are low and rather narrow forward; these are the leading characteristics of all their vessels, coupled with a large and overhanging poop for the accommodation of the whole family who all live on board, men, women, and children, sometimes three or four generations of them; for there is an enormous floating population in China who never go on shore at all, but live entirely in boats, of all sizes, down to diminutive little punts, not so large as a ship's dingy, in which may frequently be seen a whole family of seven or eight people of all ages; in this way they evade the house tax, and act as scavengers to the harbours, picking up every bit of offal and refuse that is thrown overboard from the ships.

The Chinese and Japanese do not use their oars the same way that we do; they invariably "scull" with long crooked oars having very wide blades, these are worked on a pivot, and afford a powerful means of propulsion, well adapted for navigating narrow creeks and canals crowded with boats, where the use of oars in

the ordinary manner would from want of room be impossible. The gondolas at Venice are worked somewhat in the same way, though the propelling stroke differs from that of the Chinese, and is very difficult to acquire, notwithstanding that it looks so easy.

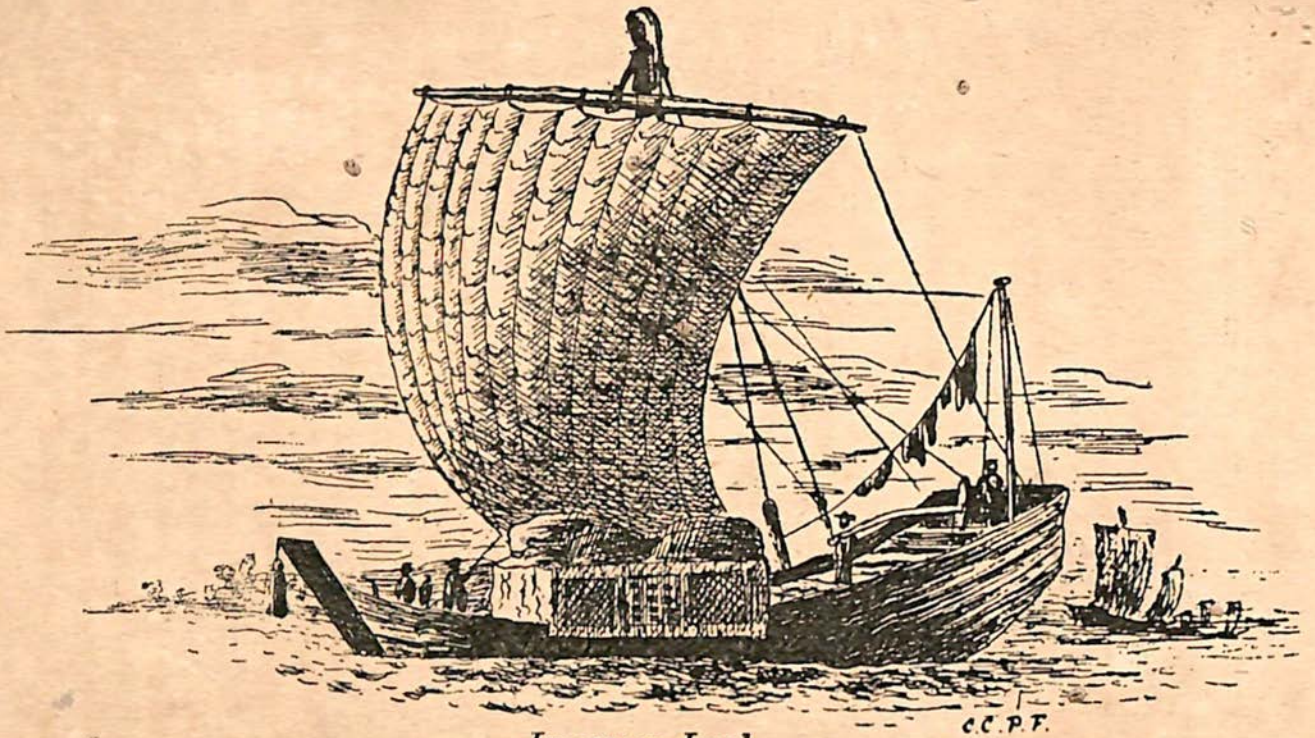
Some of the Northern junks in China have as many as five masts; two of these are generally mizens, stuck up on the poop, one on each side. The after leeches of the Northern junk's sails are straight instead of being rounded as in the Southern junks, and the vessels themselves are wall-sided, have flat bows and sterns, and are in no way such good specimens of naval architecture as the Southerners, though they carry large cargoes, and can go into very shoal water. It is said that the Chinese have not made any advance or improvement in ship building for more than 2000 years.

Almost everything in China appears to be carried by water, along the wonderful system of canals which intersect with a perfect network, all the low lying parts of the country; and a great deal of it is done by sail power, as the land is so low and there is such an absence of high trees, that the breezes sweep across it almost unobstructed, and the lofty brown sails may be seen moving about rapidly in all directions, producing a very curious effect, as the hulls of the boats are generally out of sight.

The European residents of China apply the Chinese rig to European built boats with considerable success, particularly at Hongkong, where there is a class of open gigs with very large Chinese sails (made of canvas) which sail extremely well in light winds; it is a rig peculiarly adapted to light variable winds; there is no shifting over of sheets, or dipping of lugs, or loss of time of any sort, nothing to do but to let the sails swing over to whichever side the wind takes them; so that the boat is always ready to take advantage of every puff, no matter which direction it comes from. In Hongkong roads where the wind is often very light and very shifty, the China rig has a great advantage over all other rigs, though I should very much doubt its being able to hold its own in steady winds and strong breezes.

The Japanese junks are, if possible, worse specimens of naval architecture than the northern junks of China: they have enormously high sterns, and only one very heavy mast which steps amidships, and upon which is hoisted a large baggy square sail, without any battens on it like the Chinese sails.

They sail fairly well before the wind, but nothing in the shape of a ship could well be more unsuited for working to windward, and as a matter of fact they do not often try it, but anchor and wait for a fair wind; as the Japanese however are adopting so rapidly all our Western ideas and appliances, their junks will, no doubt, soon be things of the past.



Japanese Junk.

CHAPTER IX.

RACING.

Boat racing under sail, when carried on in moderation, and when people don't bet about it, is a very good thing; and the generous practice of some admirals of presenting a cup once a year to be sailed for in their squadron, is productive of many good results: it creates a healthy spirit of emulation, it induces officers to study the subject, and to find out for themselves the best rig and the best trim, and the most seamanlike way of handling their boats; it also helps to explode many popular but erroneous theories about enormous sails and fancy rigs which look very well on paper, but do not stand the test of practice; and the excellent rule of prohibiting sinking ballast prevents people from overstraining their boats, or putting into them larger masts and sails than can be fairly carried in an open boat.

It will no doubt occasionally happen that a badly rigged and unskilfully handled boat may by a fluke win a race; or she may be the best of a very bad lot; but I venture to think that in the present day, when boat sailing has become rather popular in the Navy (possibly in con-

sequence of the absence of ship sailing) that a boat to win a race even against men-of-war boats only, must be well handled and well rigged. Of course this only applies to open boats, as it is quite unfair to put decked vessels, however small they may be, against open boats, as the decked vessel will carry lead or iron ballast, and consequently very much larger sails in proportion to her size.

In the few remarks which I propose to make upon the subject of racing, I shall only state my own opinions, arrived at principally from my own experience, and as that has been of a very limited nature, my remarks must not be taken as axiomatic laws, or treated as such; but if they give rise to discussion, and discussion to practice, I shall have done more for the subject than if I had written a three volume treatise upon it, professing to teach the complete art of boat sailing without wetting your jacket; for I cannot too strongly insist that it is to be *learnt* by practice only, though of course a few hints based upon the experience of those who have practised it may *assist.*

First let me observe that boat racing (at any rate in the Royal Navy) should be carried on in a generous and gentlemanlike spirit, free from unworthy jealously, carping, sharping, and as much as possible from betting: plenty of interest attaches to boat racing without betting, and it

not uncommonly produces a bitterness of feeling which in no way adds to the sport. It would be most deplorable if racing on the sea either in yachts or boats ever became the nucleus of the gambling and villainy which surround racing on the turf; and although yacht racing may already show a tendency in that direction: let us in the Navy keep our sport free from these pernicious influences, and carry it on in a manly and generous spirit.

It is all fair to race for cups, or money that may be offered in the shape of prizes; but the winning, or the failing to win these, does not produce the ill-feeling which generally arises from winning other people's money, or losing your own. If people want to gamble let them play "blind hookey," or toss for ha'pence: or if their ambition soars above these, let them go to Monte Carlo whilst they are on half-pay, and there rapidly amass a large fortune with very little trouble and no risk.

Remember that when once a race has started, there can be no "heaving to" to repair damages, or to make any alterations of importance, without the strong probability of putting yourself out of the race altogether; it is therefore most unadvisable to come to the post with the intention of starting for a race without having previously tried the boat and her fittings thoroughly upon all points of sailing, found her best trim,

both in smooth water and in rough; set and taken in the "running sails" with the wind right aft and on each quarter, and also practised the crew at tacking and reefing; as it is generally impossible to foresee what the weather will be like on the day of the race. and you may have to take in a reef in the middle of it. It is advisable when racing to take some spare gear in the boat, in case of accidents of a slight nature which might be repairable; some spare rope, a spare block or two, a ball of spunyarn, a hatchet* and anything else which you think is at all likely to come in useful, and which can be easily stowed. Take one or two spare bailers in case you may have to "carry on," as every drop of loose water that there is in the boat impedes her sailing and makes her cranker.

Take also a pair of binoculars, they often come in useful for picking up the position of a mark boat, or buoy which has to be rounded in the race, and which may be more or less masked from being in a line with high land, or amongst

* NOTE.—I have twice seen a race won through having a hatchet in the boat. Once we chopped up some of the flooring in a 15 ton cutter and fished the crosstrees which had been carried away whilst making sail at the start, carried the big topsail all day and won the race. The other time was in a pinnace and we were a long way ahead when the mast went over the side, breaking short off at the thwart; we chopped a new step to it, got it up, set a reefed sail and won; but on this occasion we had a very poor lot against us, and nine times out of ten loss of mast finishes a boat's chance.

shipping, or from any other cause ; and many a race has been lost through the leading boat not seeing, or mistaking a mark, and by steering a course too far to leeward, allowing the second boat to pass her and win the race.*

Examine all the boat's gear yourself before starting for a race, and trust to nobody ; see that there are no sprung sailing thwarts, or masts, or yards, no rotten ropes, half straightened hooks, ripped sails, or anything connected with the boat's gear that is at all likely to fail you during the race, remembering that very often an extra strain is put upon gear when racing, and that ropes and spars which stood the ordinary work of the boat, may have their backs broken by the extra strain, and "give out" at a critical moment, which is a great sell to say the least of it, and although it is sometimes unavoidable, still it is always worth while to take every precaution. Do not however follow a practice which is very common, and which is worse if possible than starting with worn out gear, and that is to reeve a lot of brand new ropes just on the eve of starting: if you do so without

* NOTE.—I once saw the worst boat out of nine win a race ; the leading boat mistook a mark, and ran about a mile and a half too far to leeward, the other seven followed her like a flock of sheep, and the last boat was the first to discover the mistake and haul her wind round the proper mark boat, and although she was decidedly the worst boat in the race, the others could not catch her before she got home.

having had them previously well stretched and the turns taken out of them, and given them a little work, they are extremely likely to "kink" and jam in the blocks, and to sell you just at the critical moment when your men are anxious and excited, and you want everything to go particularly smooth and clear. *Never* get excited yourself, and never lose your temper with the crew, even if things do go a bit wrong, it is not the best way of curing matters, blunders committed whilst racing are generally caused by excessive zeal, and are worthy of commendation and not of abuse, which always makes matters worse: above all things keep your head and look where you are going to, and don't run into your friends or the mark boats; reserve ramming tactics for the enemies of your country when you command an ironclad: a foul during a race is always unsatisfactory; even if you are on the right tack it is better to go round at the last moment or to give way than to have a collision, as the other boat may be erring from ignorance, and although she would be disqualified by her error, that would be very little satisfaction to you if she also placed you hors de combat by carrying away your mast or splitting your sails, or doing you some other damage which spoil your chance of winning.

Let us now suppose that all the boats have arrived at the starting post, and are moored by their sterns, to a hawser with their sails down;

this is the usual way of starting boats, and it is the fairest when practicable, and the longer the first run to leeward is, the better, as it gives the boats a chance of getting clear of each other, and prevents a crowd at the first mark boat, where there is often a general fouling match, through each boat trying to cut her adversaries out round the mark.*

You will of course moor your boat to the hawser by a "slip rope," and you should station a coolheaded man to it, one who is not likely to lose his head in the excitement, and let go when he ought to hold on, and hold on when he ought to let go.

Now station all the men for making sail, and see that each man knows exactly what he has to do, and warn them all to do it without hurry, or confusion, for it should be remembered

*"FLYING STARTS" are the usual way of starting yachts for a race, and they save a great deal of trouble.

An imaginary line is taken between two points at right angles to the course the vessels will have to take in order to reach the mark boat.

Two guns are fired *accurately* five minutes apart, and the vessels must keep behind the line until after the second gun is fired.

The object is to cross the line with "weigh on" as soon after the second gun as possible, and it requires nice judgment for if a vessel crosses the line before the second gun, she must go back and re-cross it.

The guns must be fired with the greatest accuracy.

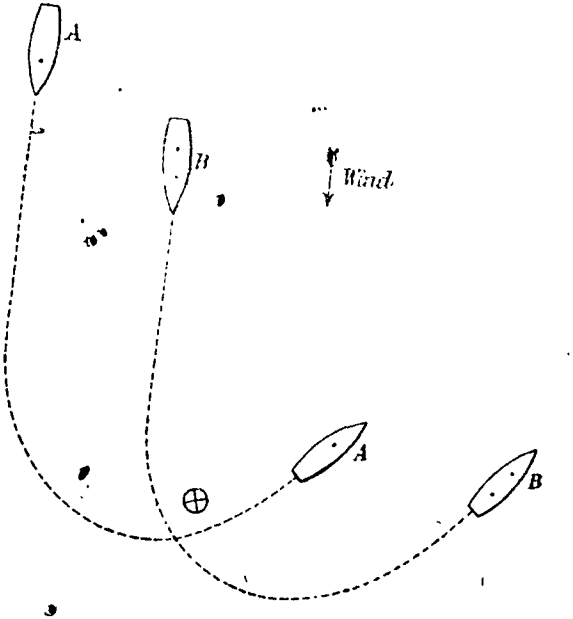
that a boat's length or two at the start in a sailing race is of very little consequence; it is quite different from a rowing race where the crews are very likely to lose heart if another boat gets the lead of them at the start; but sailing boats are not affected by any such sentimental grievances, and as a matter of fact it is very seldom found that first boat round the lee mark boat wins the race; it is almost always the best boat at working to windward and not the fastest boat off the wind that wins, and these two qualities are rarely combined in the same boat; so don't be in too great a hurry to get away, and if you see that there is a chance of a foul at the start, just hold on for a few seconds and let the other boats get clear of you, you won't lose anything by it.

Now then, "stand by." "Bang" goes the gun, and off we all go before a fine fresh "whole sail" breeze; up go the square-sails and spinakers, gaff-topsails and "kites" of all sorts, most of them more or less foul in the excitement, but bye and bye they all get themselves hoisted up clear, and away we all go before the breeze; and remember that there is no harm in having good "running sails," as long as they *do not interfere in any way with the working sails*; it is just possible that a good square-sail may enable you to pull off a race if it happens to be a very close run in at the finish; but on no account should you sacrifice the efficiency of the working sails by hampering them with halyards or booms or gil-

guys of any sort for the running sails; for, as I remarked before, one yard to windward is worth six to leeward.

We have now run down to leeward and are getting near the lee mark boat, and thinking about taking in running sails and hauling to the wind. Let us imagine for the sake of argument that you are in the middle of a crowd; there are three or four boats ahead, and three or four astern of you, but there is one boat right alongside of you, and you two have been running neck and neck all the way; and now the question is, who is to cut the other out round the mark boat, and find himself on his adversary's weather bow, or at any rate on his weather quarter, as soon as you are both round the mark, and close-hauled for the beat to windward? Let us say that the mark has to be left on the port hand, that you are now nearly dead before the wind, and that you have to haul close to the wind directly you are round the mark: under these circumstances do all you can to get *outside* your adversary, or in other words "to starboard" of him: do not steer straight for the mark, but steer a course which will take you three or four boats lengths to the right of it; and then if your adversary steers so as to pass close to the mark before he puts his helm down for rounding it (and I may here observe that this is the popular idea of cutting out) you will have no difficulty in getting the best of him; and I will endeavour to explain this by

means of a diagram; observing first of all, that if the two boats are exactly level, you must get your boat just clear *astern* of the other one; this is eaily done by jamming the helm hard over, first one way and then the other, or by flattening aft the sheets.



Now it is evident from the above diagram, that although A was astern of B at the first position, he has got the best of him at the second position; and the reason is this—A *made her*

turn before she got to the mark boat and passed close to leeward of it;, but B, having passed close to the mark boat whilst before the wind, *had to run to leeward whilst making her turn;* and thus A finds herself on B's weather quarter, which I need hardly say is a very advantageous position, as she will now most probably pass B to windward, for B's helmsman will sail his boat close, and do all he can to claw to windward and prevent A from blanketing him; though in this he would be wrong, and his proper course is to sail his boat "rap full" and forereach all he can so as to get clear of A's lee; but whichever course he pursues A has the advantage, and if B takes the former course of sailing his boat close, A will sail clean full and if the two boats are at all equal in speed and weatherly qualities, he will pass to windward of B with ease, and leave him astern, and to leeward; give him a "blanketing" as it is called in yachting parlance.

There is another thing worth remembering in rounding a lee mark boat in boats, or any long shallow craft, though it does not apply to yachts and deep vessels, and that is, that it is best to round to with tolerably small helm, and by working the sheets cleverly (after one first) to come to the wind with good weigh on the boat, instead of jamming the helm hard across her stern, stopping her weigh dead, and coming to the wind like a log.

We have now passed the lee mark boat, and are settling down for a regular good thrash to windward, of two or three miles let us say; now comes the tug-of-war, and if the wind is steady, and there are no flukes or accidents, the best boat, best handled, will win the race.

Everybody should now sit down as low as possible in the boat, all the crew should sit right down in the bottom, and there should be nothing visible above the gunwale of the boat except the head of the steersman, and one pair of eyes looking out to leeward; there is no possible advantage in exhibiting yourself on the weather gunwale with a rope round the tiller; and if the rope slips or the tiller breaks you will make an undignified back somersault into the water, and the crew will have to stop and pick you up, as your offence, though grave, will not absolutely deserve drowning: besides, the lower you sit down in the boat the better chance you will have of seeing under the sails to leeward and of looking out where you are going to. We will of course suppose that you have trimmed the boat and her sails in accordance with what has already been said upon the subject, and that you are doing your best to windward. The next thing to do is to look out for the boat which you consider likely to be your most dangerous adversary; go for her and get on the same tack that she is on, and try conclusions with her at once; you will soon see who has

the best of it, and if you find that you are beating her (ever so little) and that you don't think any of the others dangerous, then stick to her like wax, never let her get away from you, tack whenever she tacks, stick on her weather beam, and don't give her the chance of a fluke, or of benefitting by a shift of wind, which might put her to windward, and you to leeward, if you were on different tacks: but whilst you are doing this you must keep a look-out and see that a third boat is not beating the pair of you whilst you are engaged in jockeying each other.

On the other hand if you find that this same dangerous adversary can beat you on even terms, then you must do all in your power to get away from her and shake her off; if she tries to stick to you, worry her by tacking constantly, perhaps your boat may be quicker in stays than she is and thus you may gain an advantage; and if you do manage to shake her off and get away on the opposite tack to her, and that then the wind should shift a point or two, it is obvious that if it shifts one way it will put you to windward; whereas if it shifts the other way it will only put you a little further to leeward than you were before; thus you take the only chance there is of beating a faster boat. Another plan for shaking off a boat that is sticking on your weather beam, is worth remembering, and may generally be put in practice when racing in a harbour or roadstead where there are ships about. Look out for a good

long ship, and when you get her stern a little abaft your weather beam, (that is to say in such a position that you will *just fail* to fetch it) then tack; the adversary on your weather beam tacks too, and then when you get to the ship, unless he is a very long way to windward of you, he will either have to bear up and run under the stern of the ship and thus give up all his advantage, or else he must tack and go away on the opposite tack to you; and so you will scrape him off for a time, at any rate. Perhaps he will try to weather the ship, not having quite room to do so, and come to grief in the attempt: so that you may possibly be the means of laying a trap for him, and spoiling his chance. An amusing and somewhat apposite story is told of an experienced old Cowes skipper humbugging an adversary. Yachts "A" and "B" are sailing a very close race, and running in for the finish with the wind abeam; they both have jib topsails set, and the wind is freshening, and they are burying themselves with the amount of canvas they are carrying; yacht "A" is slightly ahead, and one of the amateurs on board ventures to remark to old Ben the skipper that his jib topsail is doing him more harm than good. "I knows that" replies old Ben, "I knows that as "well as you do, but t'other chap's a young "hand, and he is watching me and will do the "same as I do; if I takes in my jib taups'l "he'll take in his'n, and his'n doing him more "harm then mine's doing me." So Ben con-

tinued to carry his jib topsail, and his 'cuteness was rewarded by winning the race. A little *ruse de guerre* of this sort is perfectly fair in racing, and experience will teach and suggest many such.

If several of your adversaries are faster to windward than you are, then of course your chance of winning is very small, and the only thing to do is to take out a line of your own; it is useless to do the same as the other boats are doing, so you must stand off on the opposite tack to them, even if it is obviously the wrong one, and crosses a lee tide, or has some other disadvantages attached to it; it is your only chance so you should take it; the wind may shift considerably; and while your adversaries are jockeying each other with a failing breeze in one direction, they may perhaps to their mortification, see you coming out from under a point of land in the opposite direction with a slashing fine breeze, and snatching the honours from them in a very inferior boat. This of course would be a fluke, but in many harbours and roadsteads, especially where there is much high land about, the wind is often shifty and uncertain, and a fluke is always worth trying when you have no other chance.

It is a very common error when working to windward in a race for the purpose of rounding a weather mark boat, for a boat to over-

reach herself, that is to say, she stands on further than she need do for the purpose of weathering the mark; this very often happens with the leading boat through having no other boat to guide her; and then No. 2 profiting by No. 1's experience, tacks so as just to weather; robs No. 1 of her advantage, and beating her on the run in, wins the race. I have seen many a race lost and won like this. It is always a difficult thing to calculate exactly where a boat will fetch; one reason is that the wind is not always steady, but even if it is steady, it is just as well to reduce the chances of error as much as possible, and it may generally be done as follows: say that the weather mark boat has to be left on the port hand, that is to say you will pass her while you are on the starboard tack; endeavour, therefore, to arrange your tacks so that you shall pass close to leeward of the mark boat whilst you are on the port tack: you will then make your final tack for weathering her whilst you are close to her, and if you can do this without encountering an unfavourable tide, or an increase of sea, you will minimize your chance of error on your final tack and cannot over-reach yourself much. Local circumstances will of course sometimes render this plan objectionable, and you may have to make your final tack a long way off from the mark-boat: in this case you must only trust to your judgement, and watch carefully a leading boat if there is one.

Make as much use of the tide as possible when racing; (and indeed under all circumstances) an apparently very small tide will do a tremendous lot for you, either in lifting you to windward or dragging you to leeward, according to how you work it. A tide under the lee bow is particularly favourable for enabling a boat to claw to windward; and about the only circumstances where you will be justified in sailing an open boat *very* close to the wind, is where by doing so you can just "under-bow" the tide as it is called; that is to say if in working to windward you can on one tack by sailing your boat very close, just make the difference of having the tide either on the weather bow or on the lee bow, it is generally worth while to do it; and if the tide is at all a strong one it will hoist the boat to windward in a wonderful manner.

Local knowledge is a great thing; gain all you can, by observation, by watching fishermen and local boats of all sorts, and also by asking questions judiciously, and taking what is told you with a certain amount of salt, as most people, including seafaring men, like to indulge in a little exaggeration at the expense of strangers: about 25 per cent. will generally be a fair allowance to make (except with orientals); thus if you are told that the tide runs 4 knots an hour, you will probably find that it runs about 3, and so on.

A very common mistake that is made in boat racing, is to carry too much sail, I feel sure that many more races have been lost through carrying too much than too little sail; no boat can do her best when she is over pressed, particularly an open boat which takes in water so easily; so you should try and regulate your sail exactly according to the amount of wind that may be expected throughout the race; remembering if you have any doubt about it that it is far easier to shake out a reef than to take one in.

With regard to choosing, rigging and preparing a boat for a regatta, there must always be a considerable variety of opinions: but as a general rule, supposing that you have a choice of two or three boats, choose one with a long floor in proportion to her total length: length of floor is of more consequence than fineness of ends; two sharp ends with a lump in the middle, never did any good yet; it is a mistake that is very common with English boat builders, and that is the reason why the French boats generally beat ours both in pulling and sailing, their boats are bluffer above water, but they have longer floors, and consequently more buoyancy. The requirements for an open sailing boat and a decked yacht are quite different; the yacht is intended to carry lead or iron ballast, and may be built very deep, and without any floor at all.

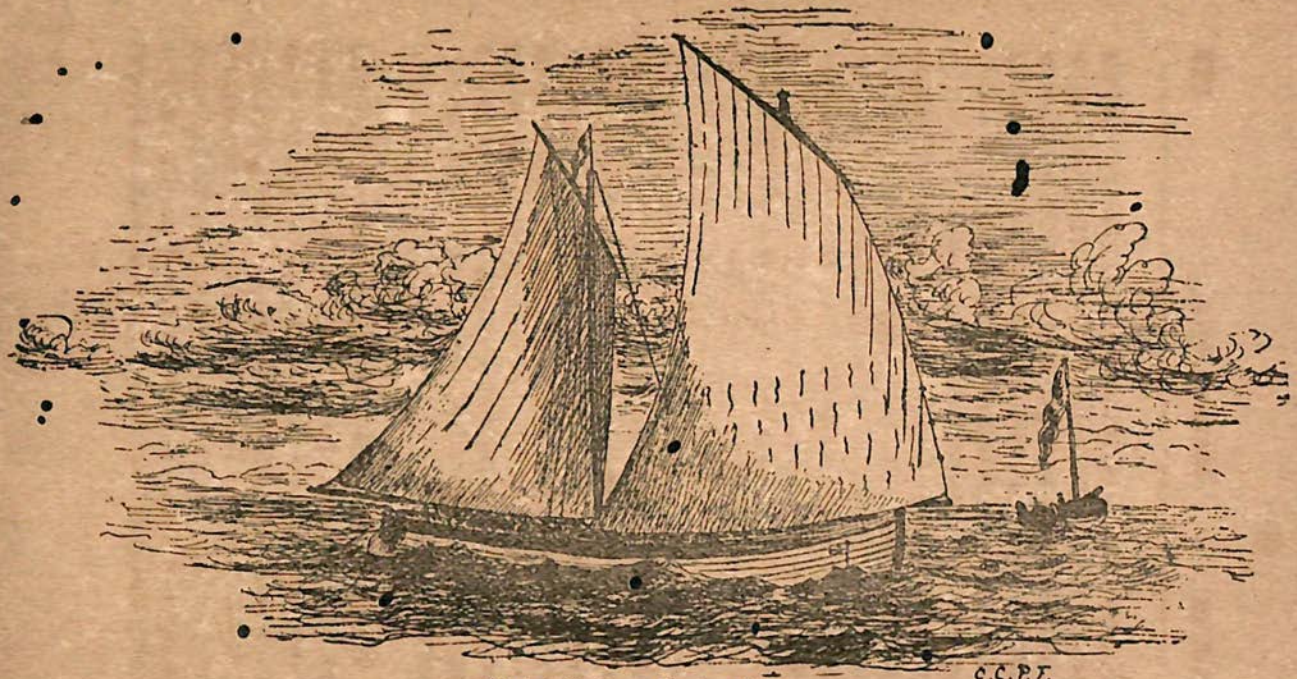
I don't suppose that any of the English yachts of the present day would stand upright at all

without a considerable quantity of ballast, or lead in the keel, even if she had no mast in, she would tumble right over on her side in consequence of her shape; and as a general rule it will be found that the vessel which is crankest without ballast will become stiffest with ballast: and on the other hand the vessel that is stiffest without ballast that is to say, the flat bottomed vessel, will be found to be least affected by the addition of ballast; this stands to reason, as you cannot get the ballast so low down as you can in the sharp bottomed vessel: therefore for a boat that is to sail without "sinking ballast" (*i.e.* any ballast heavier than water) a good flat floor is absolutely necessary, and she must depend for her weatherly qualities upon a keel or centre board after the manner of the American yachts. Choose therefore a boat with a good floor, so that she may have something to stand upon when you put sail on her; also choose a boat that has a fair amount of freeboard, or height out of water; so that she will not begin to take the water in over the gunwale directly she heels over, or gets into a bit of a sea. Your choice should also be guided more or less by the weather that is to be expected; remembering that as a general rule, light boats do best in light winds and smooth water: and heavy boats in strong winds and rough water.

With regard to rig, almost all rigs are good, provided the sails are well made, *and well set,*

and the boat well handled; almost everybody has his own fancy about rig, according to the rig which he has won most races with, or seen others win races with. I am particularly fond of some shape or form of dipping lug for almost every class of boat, provided you can get men to work it properly: I have already in a previous chapter pointed out some of the advantages of a dipping lug, the principal one being that it allows a boat to lie nearer to the wind than any other sail; but it should also be remembered that in racing with a dipping lug, you are dependent to a great extent upon the skill of the boat's crew, far more so than with any other rig; if the crew make a mess of dipping the lug at a critical part of the race, they may lose a race for you that you would otherwise have won; but notwithstanding this possibility, I prefer it to any other sail, and the best rig that I know of for an ordinary 30 foot, or 28 foot man-of-war cutter, is a good large dipping lug foresail, and a standing lug mainsail, with the mainmast stepped at the after thwart, or the one next to it.

If it is found that the sails lap over each other too much, the foresail can easily be carried forward a little more by rigging out over the bows a short stout bumpkin, about two feet long, to hook the fore tack to. This rig with an extra lug to set as a square-sail when running, and a jib to set *off the wind only* on a flying bowsprit, will get about the best sailing out of an ordinary



30-*foot Cutter—Racing Trim.*

30 foot cutter. In order to make the mainsail stand properly, there should be a wire main-stay taken to a bolt clenched through the keel, not more than four feet from the main-mast; otherwise it interferes with dipping the foresail.

The following dimensions make a good dipping lug foresail for a 30 foot cutter.

	ft.	in.
Head	14	6
Luff	16	9
Leech	22	3
Foot	22	10
Diagonal	21	6

The diagonal is measured from the foremast yard-arm to the clew. With a yard of that length, it is best to dip the foremast yard-arm, and the halyards should therefore be rove from forward, aft, and the shrouds taken well abaft the mast, as the tendency is to drag the mast over the bows, in all dipping lugs, as the sail is hoisted.

Water ballast only should be carried, and this should be regulated according to the wind; thus in a light wind, if there is a full boat's crew in the boat, very little ballast will be necessary, perhaps none at all; but in a fresh breeze, about eight or ten barricoes of water will be sufficient for an ordinary 30 foot cutter, less for smaller boats, and more for launches and pinnaces; but

it must of course be remembered that the amount of ballast to be carried, must be regulated, not only by the wind, but by the amount of sail which you propose to carry; and beware of over-doing it in the matter of ballast and sail, it is not the same as a decked vessel, where you may increase the ballast and consequently the sail in an extraordinary manner in proportion to the size of the vessel, but an open boat must be buoyant, or she is no good at all; and if you put in much ballast and impair her buoyancy and corkiness, you will find her unsafe, unhandy and slow.

I have already made some remarks about trim, so that, I presume, no one will think of starting for a race without having previously found out by actual practice the best trim of his boat upon all points of sailing; to neglect this is inexcusable and deserves failure.

With regard to temporary false keels for racing it is certain that if there are two boats otherwise equal, but that one of them has a false keel, she will certainly go to windward better than the other one; but it is very easy to overdo it in the matter of keels, and by putting on too large a keel to make a boat crank and unhandy: and I may remark upon a very common and popular error, which is to suppose that a false keel makes a boat stiffer under sail; on the contrary, all keels, except very heavy metal ones, make a boat

cranker; the water presses against the lee side of the keel, and prevents the boat from going to leeward, but at the same time that it does so, it makes her heel over more, as the keel is below the centre of gravity of the boat, and the tendency of the water pressure (to use plain and unscientific language) acting upon the lee side of the keel forces it to windward, or rather, holds it, while the boat goes to leeward; and in a seaway, a deep keel is apt to become a source of considerable danger, as it prevents the boat from giving to the sea. I have been nearly swamped in an open centre-board boat myself, and only saved her from filling by tricing up the centre-board, notwithstanding that it was an iron one of considerable weight: it is difficult to explain this, but a trial or two in an open centre-board boat in a seaway, will convince the most sceptical

A "camber" wooden keel, that is, a keel with depth amidships and rounded off to nothing at both ends, is a good sort of keel for racing and makes a boat handy: but the keel which I have found best and most convenient is a thin sheet of iron screwed on to the side of the boat's main keel, somewhere near the middle of the boat, it need not be more than one-third the length of the boat, it is very quickly put on or taken off, and should be fitted with nuts and screws; it does not injure the boat in any way, and when taken off, the holes should be filled up with putty; this keel is nothing more nor less than a centre-

board, and makes a boat very handy and very weatherly; about eighteen inches to two feet clear below the main keel is quite deep enough for it; it is so thin that it offers scarcely any "fore and aft", resistance, and so light that it will not sink the boat if she fills.

RULES FOR RACING.

It is scarcely necessary to say that no racing rules can be made to abrogate the ordinary rules of the road; such as that Port tack gives way to *Starboard tack, and that boats "going free" give way to boats "close hauled," and that the overtaking boat must not run into the overtaken boat; but there are a few special rules which should always be attended to in racing, and which no one should start in charge of a boat for the purpose of racing without knowing. One of these is that if two boats are rounding a mark together the outside boat is bound to give the inside boat room, that is to say, provided the inside boat has established a "lap" as it is called, before the outside boat puts her helm over for the purpose of rounding the mark; but on the other hand, if the inside boat has not established a lap, or in other words has not covered the outside boat with any part of her bow or bowsprit, before the latter puts her helm over for the purpose of rounding, then the inside boat has no business to jam her nose in between the outside boat and the mark, and if she does she does it at her own risk, and the outside boat is *not* bound to give her room.

* NOTE.—There is an exception to this at Bermuda, where both boats are obliged to tack if they meet whilst racing.

If two boats are standing "close hauled" towards a lee shore, shoal, or any other danger, so that the leewardmost boat cannot tack without fouling the other one, then the latter is bound to tack directly the lee boat hails her to do so, but the lee boat must tack at the same time herself, that is to say she must put her helm down *at the same moment* that the weather one does and not stand on so as to get on to the weather quarter of the boat she has forced to tack.

A boat may "luff" as much as she likes in order to prevent another boat from passing her, but she must not "bear away" to do so.

A buoy, vessel, pile, or any other object which is one of the marks in a race, must not be touched by a boat, or her sail, or anything belonging to her; any boat infringing this rule will be disqualified unless it can be proved that she has been wrongfully forced on to such mark by one of the other boats.

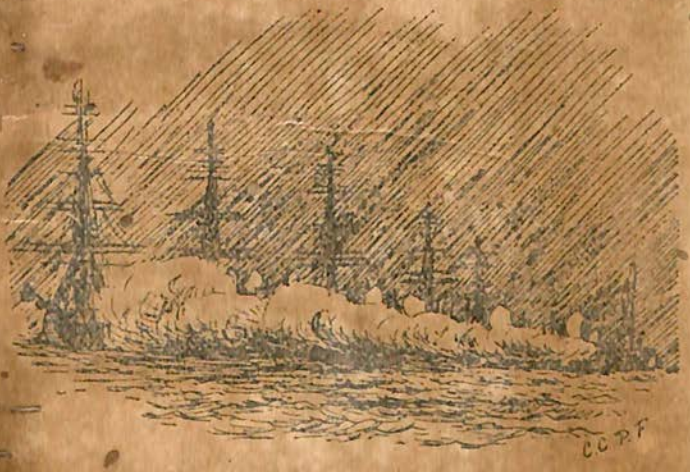
No oars, paddles, bottom boards, bailers, hands or feet, or anything else may be used in the water to propel a boat in a sailing race.

If a boat anchors, she must weigh her anchor again and not slip it.

These are some of the principal rules in yacht racing, and they apply equally to boats,

and should always be enforced by the committee of a regatta, and attended to in private matches as they are rules which experience has taught to be necessary to ensure fair racing.

And remember that an ounce of practice is worth a whole ton of theory.



"Bang" goes the gun.

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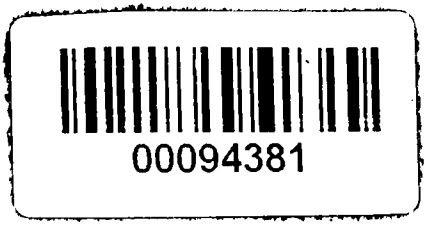
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